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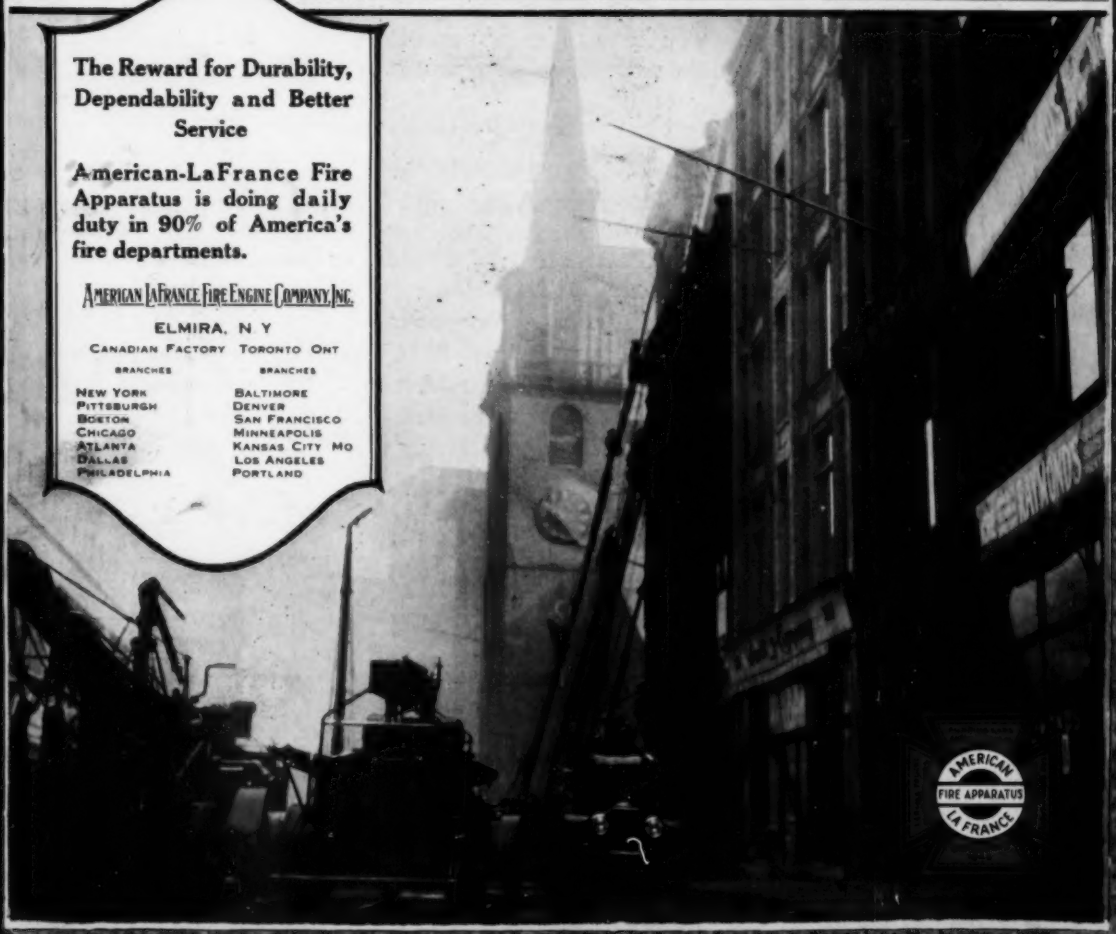

When Buying Fire Hose

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What we
Have to
Say—

then—

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Do Your Own Thinking

WHEN you buy fire hose it isn't enough to know what the materials are. You have to know more if you want to buy efficiently and avoid the necessity of frequent repeat orders.

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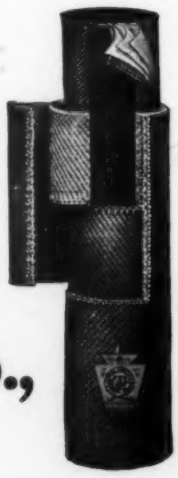

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Wake them with a Federal—that weird, penetrating scream that cuts through all noise and drives into human consciousness as no other signal can.

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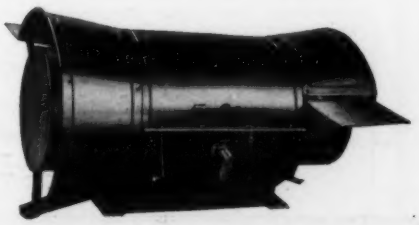

The Journal of the Fire Protection Profession Since 1877

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FIRE ENGINEERING

A Consolidation of FIRE AND WATER ENGINEERING and THE FIRE ENGINEER

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More Than He Bargained For

CALVIN COOLIDGE'S recent fishing exploits recall another story they tell on Silent Cal of the White House:

¶ One Sunday after the President had returned from church, where he had gone alone, Mrs. Coolidge inquired:

"Was the sermon good?"
"Yes," he answered.
"What was it about?"
"Sin."
"What did the minister say?"
"He was against it."

¶ And, in more serious vein, the following quotation from a Coolidge speech seems to reflect the very spirit we try to express in the work of FIRE ENGINEERING:

¶ "It has come to be an axiom of successful business that profit is not the sole end to be sought. Business success in whatever field is more and more the result of policies which look to give service to the public. The business which on the whole is likely to prosper most is that business which aims to give the customer something more than the mere commodity which he comes to buy."

¶ The more we can serve you, the better we shall be pleased!

The Publishers

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Entered as second class matter at the Post Office, Albany, N. Y. January 29, 1926 under the Act of March 3, 1879.

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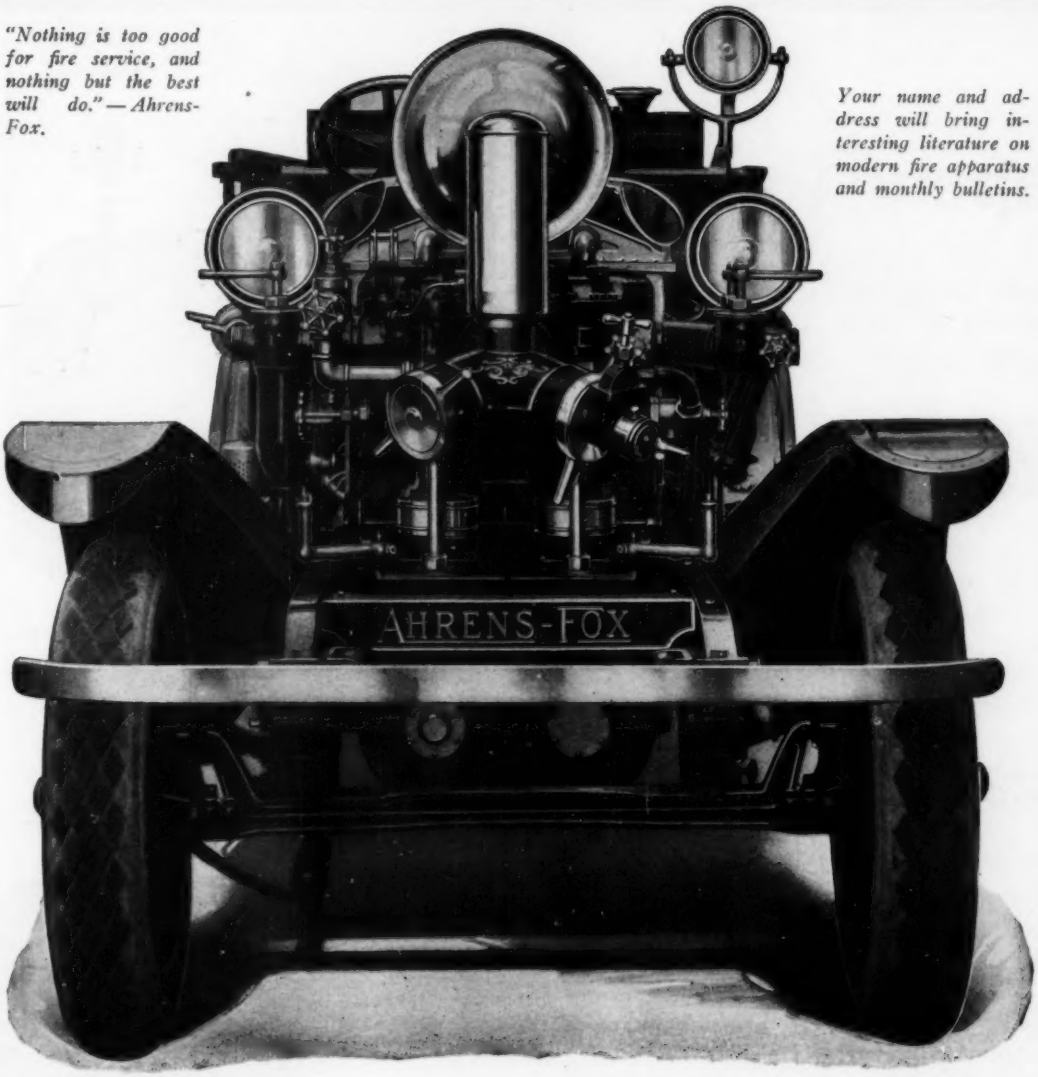

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A. D. T. provides a nation-wide service for better protection against fire loss and water damage.

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In this day of modern fire prevention and protection methods you fire officials realize without exception the vital importance of automatic sprinkler equipment in large buildings everywhere—and you, therefore, insist upon sprinkler installation.

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Thru these offices we provide a service that can be divided into two classes, as follows: First, sprinkler supervision with a constant day and night check-up on every vital part of the sprinkler equipment in their territory and instant detection of a dangerous risk or a blaze. Second, a watchman supervisory service that gives needed warning of the failure of a watchman to make his rounds because of death, accident illness, robbery, or other cause.

This service is provided as a form of cooperation with local fire department officials, often at their suggestion and invariably with their recommendation, is approved by the National Board of Fire Underwriters, and it is our desire to work in closest harmony with all fire officials for the common good.

May we send Complete Information?

CONTROLLED COMPANIES

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That's where Threadneedle and Cornhill meet at the "Bank." Here, before the Royal Exchange, you see the Waukesha Motored Trackless Train which traversed the whole United States last year and just started on its European tour. Maintaining a rigid schedule all last year, pulling a 16000-pound Pullman trailer and hauling, in all, a load of 24000 pounds was a severe task, but is adequate proof of the engine stamina built into all Waukesha "Ricardo Head" Heavy Duty Six Cylinder Engines.

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Better write today for full descriptive literature

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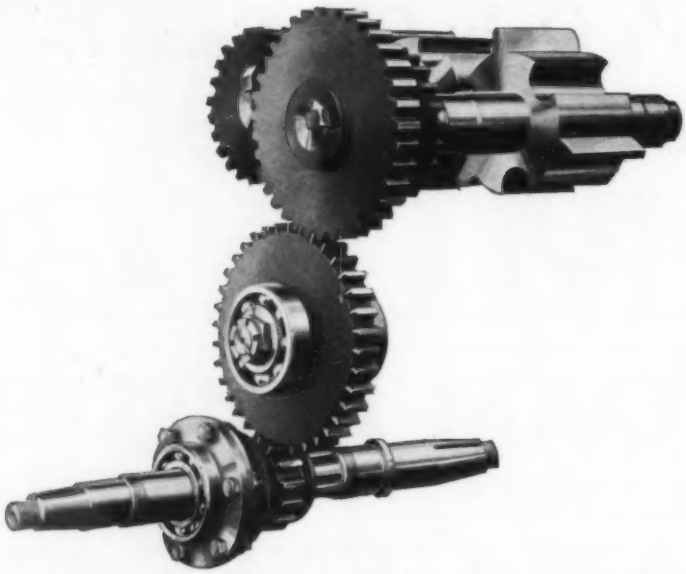
This photo shows two Amdyco Foam streams in action at an oil fire. In just 2 minutes and 40 seconds blaze was completely extinguished.



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Dependable

FIRE ENGINEERING

(A Consolidation of FIRE AND WATER ENGINEERING and THE FIRE ENGINEER)

The Leading Journal of the Fire Protection Profession

VOLUME LXXIX JULY 25, 1926 NUMBER 14

Value of Fire College Training to an Officer

Information That Can Be Gained by Observant Officers of Other Departments at the N. Y. Fire College—Report by Student

A REPORT issued by Assistant Chief James Hogan of the Bayonne, N. J., fire department to his superior officer, Chief Alfred Davis, enables one to obtain a good perspective of the wealth of firemanic information that can be gained by the attendance of officers of other departments at the New York Fire College course. The courtesy, discipline, and efficiency of the members of the New York department were greatly admired. Excerpts of the report follow:

Asst. Chief James Hogan, Bayonne, N. J.

On April 12th, on your recommendation, I was assigned by the Hon. Bert Daly, Commissioner of Public Safety, to attend the New York Fire Department College and Training School.

In obedience to those orders, I reported to Chief of Department, John Kenlon, at Fire Headquarters in the Municipal Building, New York City, on April 12th. Chief Kenlon assigned me to quarters in the 3rd Division, under the command of Deputy Chief Department George L. Ross, where also is quartered Hook and Ladder Co. No. 24, in West 33rd street, one of the busiest fire stations, situated right in the heart of Manhattan Island, where there are located the greatest number of factories, shops, loft buildings, departments stores, theatres, and hotels, within any other similar area in the world, and containing every hazard and form of occupancy known to the fire fighting world. This district embraces the territory from 14th street to 59th street, from the East River to the Hudson River.

Attended Many Alarms

During my stay in these quarters, I attended some of the largest fires in the city; three of them were 2nd alarms, two of them were fifth alarms and approximately 150 were first alarms—all personally attended by me. There is no doubt, but that by reason of my close association with Deputy Chief Ross during all of this time, and his ever constant desire to give me the benefit, by contact and by explanation, of every command or order he issued, both in quarters and at fires, I have thereby gained a knowledge and an experience, the like of which I had never anticipated. I worked side by side with Chief Ross at fires, and accompanied him to every place he went, when on duty, in and out of buildings afire. I not alone heard his directions, but saw them executed and otherwise I received the benefit of his long and honorable career of thirty-seven years in the New York Fire Department.

When not in quarters, or at fires, I was attending the Fire College on West 68th street near Broadway or the School of Instruction on East 68th street near Lexington avenue.

In the Fire College, I was under the command of Deputy Chief of Department, Thomas F. Dougherty, who is the head of the faculty, which is made up of several chief officers of the department.

In the School of Instruction, I was under the command of Battalion Chief Thomas Larkin and his staff of officers.

Heard Lectures and Made Visits

At the Fire College, I heard numerous lectures on the science and the practice of fire fighting. Every known cause and effect of fire was discussed, argued and demonstrated. In addition to the theory of fire fighting methods, I also witnessed the practical side of fire fighting by means of demonstrations, either with models or with the actual apparatus. I visited and studied at the Repair Shops, in the Division of Apparatus, in charge of Deputy Chief of Department, Richard J. Marshall. I also visited the fireboats, the high pressure, the rescue company, the fire telegraph signal station, the department's ambulance, the division of public assembly which has to do with the theatres and other places of public amusement, the division of fire investigation which has to do with arson and with fires of suspicious origin, the bureau of fire prevention, the division of combustibles, fire appliances, interior alarms, building construction, etc.

I also visited the offices of the National and the New York Boards of Fire Underwriters, the New York Fire Patrol (Salvage Corps) and the offices and plant of the Automatic Sprinkler Company.

Subject of Lectures

In the Fire College, the subjects on which lectures were given included: high pressure by Deputy Chief Henry B. Helm; marine and dock fires by Deputy Chief Edward J. Worth; garage, oil and paint fires by Deputy Chief Dougherty; fires in frame structures by Deputy Chief John Davin; tenement house fires by Deputy Chief Dougherty; care, maintenance and operation of fire apparatus by Deputy Chief Marshall; fire telegraph signals and alarms by Battalion Chief Charles W. Rankin; chemicals, gases and combustibles by Inspector Leo Liebermann of the Bureau of Fire Prevention; discipline and administration by Deputy Chief Dougherty; ventilation of buildings afire by Deputy Chief Dougherty; overhauling fires by Deputy Chief Helm—several other subjects where the discussion was general.

I witnessed the actual performance or the practice of most of the theories advanced in the course of lectures. For instance:

"At the Fire College, I heard numerous lectures on the science of fire-fighting and the practice of fire-fighting. Every known cause of and effect of fire was discussed, argued and demonstrated. In addition to the theory of fire-fighting methods, I also witnessed the practical side of fire-fighting by means of demonstrations, either with models or with the actual apparatus."

in the department's smoke test house, I saw the effects and the benefits of proper ventilation, the functioning of automatic sprinkler heads under varying temperatures. I personally raised and operated a 65 foot water tower. I also observed both of the high pressure pumping stations in action.

N. Y. School of Instruction

At the School of Instruction, under Chief Larkin, I observed and studied the New York Fire Department's method of training recruits for the service. The length of the course for recruits is ordinarily thirty days, during which time the men are drilled in ladder and rope work, scaling floor by floor from the ground to the roof of a six story building and sliding a rope therefrom, by means of life belt, equipped with a snap-hook. I also studied various forms of tools and equipment used throughout the department, the method of stretching lines, the rasing of ladders, the use of hooks, lock openers, and in fact every phase of fire fighting equipment and appliance.

Battalion Chief Larkin, has been the Drillmaster and Instructor of the New York Fire Department's school for seventeen years. Through his school have passed more than seventy-five per cent of the total force of 6,500 firemen. In addition there have also passed hundreds of members of various fire departments throughout the United States and even some from the capitals of Europe. Under Chief Larkin's command I received very valuable and highly important instruction in fire fighting, particularly from the standpoint of exterior operations, ladder-work, fire escapes, roofs, window-sills, etc.

Inspection of Fireboats

During my trip of inspection of the fireboats, I spent two hours with Deputy Chief John J. McElligott of the Marine Division, going over the fireboat John Purroy Mitchel, the latest and most modern boat in the fleet of ten fireboats in the N. Y. F. D. The "Mitchel" is the only oil burner in the service. Chief McElligott was most patient and considerate and gave me the advantage of every bit of information that could possibly be told about fireboats and fighting marine fires.

Work of the Rescue Company

While observing the apparatus of the Rescue Company, where Capt. Walter Lamb was most kind and attentive to me, I responded with that company to a fire of fair sized proportions. This apparatus is a special one and is used for extra-hazardous types of fire because of its special equipment, such as smoke masks, pulmotors, acetyline torches and every known special device used in fire department work and in life saving apparatus.

Visited Places of Assembly

I personally visited the new Madison Square Garden, the most modern place of large public assemblages in New York. I was accompanied by Capt. Harry Schoener of the Division of Public Assembly. He also accompanied me to the Martin Beck Theatre, the latest constructed place of amusement, containing a stage, dressing rooms, scenery, etc. I observed the construction, the means of exit, the appliances, the means of ventilation, the asbestos curtains, etc. Capt. John J. McCarthy, in command of this Division was also most kind and helpful to me in this special branch of fire protection.

Afternoon With Fire Marshal Brophy

I spent an entire afternoon with Fire Marshal Thomas P. Brophy, Chief of the Division of Fire Investigation. Chief Brophy, a former newspaper-man has been Fire Marshal of New York for many years and the time I spent with him was most beneficial and enlightening to me, especially from the legal angle of carrying on operations against fire-bugs. He gave me the benefit of the knowledge of his filing system and otherwise related many incidents and gave me much encouragement in the handling of fires of suspicious origin.

Through the courtesy of Dr. Harry M. Archer, Honorary Deputy Chief and Medical Officer, who has thirty-five years of daily service without pay with the New York Fire Department, I spent three hours on the Department Ambulance, saw demonstrations of all the equipment, the first aid devices, the methods of artificial respiration, etc. Under Dr. Archer's personal direction, I was instructed in the method of resuscitation, using a fireman for a subject.

Fire Alarm System

At the Fire Alarm Telegraph central station, I spent an evening through the courtesy and assistance of Fire Telegraph Dispatcher James Seymour. I witnessed the lay-out of the plant and its equipment, I observed its operation, saw alarms being received and transmitted, ascertained every method used in fire alarm service there, and I personally witnessed the handling of at least twenty alarms in the time I was there. This station in the year 1925, handled 13,071 alarms of fire, so you can readily understand that I was observing and studying the busiest and most important fire alarm telegraph central station in the world.

Chief Kenlon's Good Work Observed

And right, here, let me add that it has been my pleasant experience to observe that the splendid discipline and morale of the New York Fire Department is reflected in the example set for the entire force by Chief Kenlon himself. I have observed that the rules and the regulations of the New York Department are enforced, but are also complied with, due to the manner in which the officers themselves conduct themselves, both at fires and in quarters. I found a most wholesome respect for authority and a willingness to cooperate on all sides. It is my humble opinion that much of the efficiency and the success of the New York Fire Department are in a great measure due to discipline. The firemen look up to their officers as fitting examples, and while there is that respect for the commanders, there is likewise the same amount of efficiency in the line of duty.

Fire Boat for Houston, Tex.

The fire boat, the "Port Houston," which was constructed at the yards of the Bethlehem Ship Building plant at Wilmington, Del., and which was demonstrated before the delegates of the National Fire Protection Association at their annual meeting, is the forerunner of a new feature in fire boat design.

It is the first fire boat to be equipped with Diesel electric

The "Port Houston" Undergoing a Test

drive engines. The propulsion machinery consists of two Winton Diesel engines, each directly connected to a Westinghouse 350 k. w. 500-volt generator with a 25 k. w. excitor. This generates the power for the 2,360-h. p., 500 volt single armature propulsion motors. A Winton engine driving 100 k. w. 270 volt Westinghouse generator will be used for auxiliary power and for emergency purposes.

The pumps will deliver 7,000 gallons of water per minute at 150 pounds pressure or 3,500 gallons at 300 pounds pressure. There is the usual equipment of large nozzles, tower and turret nozzles. A cross sectional plan of the boat appeared in an earlier issue of FIRE ENGINEERING.

Buffalo Has Many Basement Fires

Because of the large number of basement fires, Buffalo, N. Y., has the second largest fire loss in the United States in accordance with a statement made by Chief Hedden.

"Unfortunately, not all business men are honest," the chief said. "We are repeatedly confronted with fires in basements to which all doors have been locked. Boxes are piled high behind windows, or partitions have been built inside the cellar so that we cannot get the water in to put the fire out."

Chief Hedden proposed an ordinance which would make it mandatory for sprinklers to be installed in all basements in which merchandise is stored and which is not accessible for the fire department. This suggestion has met with considerable opposition from the business people who, it is said, have a vague opinion that an expensive sprinkler installation is required. A meeting has been called at which the chief will meet with the merchants and will draft an ordinance suitable to all.

Dry Bearing Causes Fire in Sash Factory

Flying Embers Spread Fire Throughout the Plant—Big Blaze Develops from Small Source

THE fire described in this article of the series on administration is of interest in that it differs from previous fires treated in these columns. It occurred in a city having but three engine companies, one ladder and one hose company in the department.

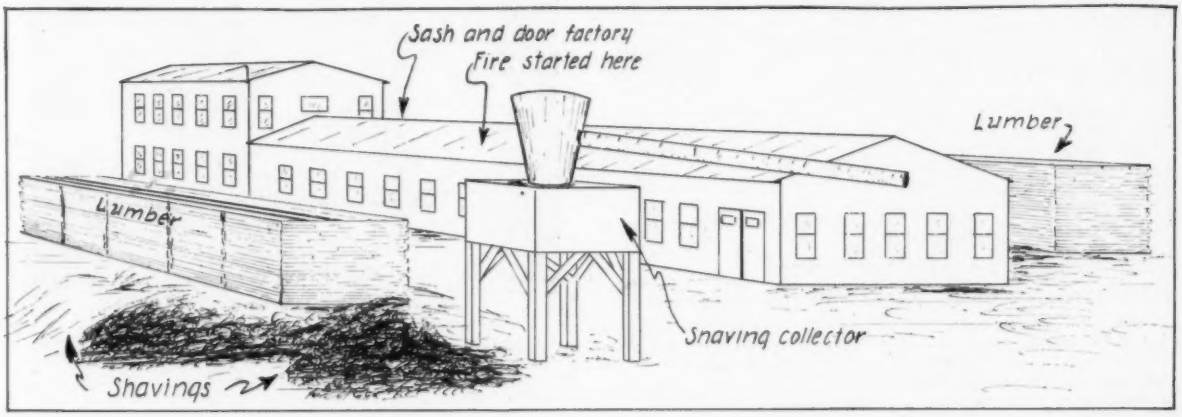
The building, as shown in the sketch, was entirely of frame construction and was in about the worst housekeeping condition that could be imagined.

Due to the fact that it was located in the surburban section of a small town no attention was given toward the enforcement of the fire protection ordinances which were on the statute books of the town.

At the time the fire occurred the building was well filled with unfinished and partly finished woodwork used in the construction of window casing, window sashes and doors. There was a vast amount of shavings around the plant and dust on every rafter.

As shown in the sketch there was to the rear of the plant a number of piles of lumber, while on the near side was one large pile of lumber completely surrounded by piles of shavings.

A shaving collector was provided and the shavings sold to a contractor. Due to the contractor's failure to promptly remove the shavings at all times, it was frequently necessary to dump the shavings on the ground and shovel them to one side in order to keep the collector clear.



The collector itself was built of woodwork except the covering on top of which was of sheet metal.

The Fire Department

The fire department, as noted above, consisted of three engine companies, one ladder company and one hose company.

Each of the engine companies was equipped with a triple combination pumper while the ladder truck was of the city service type and the hose truck of the hose company of the combination chemical and hose type.

The manual force of the department was very limited, there being an average of three paid men to each company. Call men were provided by the rules of the department, but at this fire they showed up in small numbers due to the fact that most of them were at work elsewhere.

The Fire

The fire started about two o'clock in the afternoon when the shop was very busy and well filled with materials. A pulley bearing, up near the ceiling became dry and the pulley "froze." Immediately the belt began slipping, but before anything could be done flame burst forth just above the pulley, apparently in dust which had accumulated there.

Fire promptly started at this point and traveled quickly along the various rafters. An attempt was made by the employees of the plant to brush the fire off but due to the fact that they could not quickly get up to the height of the rafters fire continued to spread until it had reached the corner wherein was stacked a great quantity of window sashes and door frames, piled up to the roof.

At this time the superintendent transmitted a call for the fire department by 'phone bringing one engine company and the ladder company, with the chief in charge.

The chief showed good judgment and immediately transmitted a call for the balance of the apparatus.

At this fire there were available four hydrants, No. 1, two hundred feet from the fire; No. 2, two hundred feet from the fire; No. 3, one hundred feet from the fire; No. 4, five hundred feet from the fire.

All of the rest of the hydrants were farther than 800 feet from the building.

The mains were apparently of good size and 45 pounds pressure was available at all times.

The chief, upon rolling in, placed Engine Co. No. 1 at hydrant No. 3, stretching two lines and operating on the fire within the building.

By the time the fire department had arrived, however, due to the great distance it had to travel, the interior of the building was fully ablaze and little could be done toward extinguishing the fire until the arrival of reenforcements.

Both of the lines from engine company No. 1 were operated with the assistance of the members of the truck company, on the fire.

They could do no more than hold their own while awaiting for additional apparatus.

Seven minutes elapsed after the chief called the remaining apparatus, before it rolled in. In the meantime fire continued to burn furiously among the materials in the building.

Unnoticed to the chief, fire apparently traveled through the dust collector piping and reached the dust collector outside of the building. A pretty fair wind was blowing and fire after droping to the shaving collector reached the piles of shavings on the ground and commenced spreading the fire around through these piles, fanned by the wind.

Upon the arrival of engine companies Nos. 2 and 3, they were placed respectively at hydrants Nos. 1 and 2, each laying in a single line.

It was necessary to press into service some of the workmen around the plant.

The fire department quickly operated from the near side of the building and forced the fire backward through the building toward the two-story end.

With all of the lines in operation the department did good work in handling the main fire.

However, in the meantime the shavings outside of the building commenced to burn furiously and the wind carried them to remote points, setting fire to the lumber on the near side of the building and also starting fire on the roof of the plant.

The fire on the roof started burning alongside the two-story building, which fire up to this time had not entered.

The department was required about this time to direct some attention to the lumber piles, breaking the forces into two, using two lines within the building and two lines on the lumber piles.

The two lines within the building were holding the fire nicely when it was discovered that the two-story structure was ablaze throughout the second floor—evidently from the fire starting on the roof of the one-story building from shavings.

Due to the wind, from this point on fire seemed to increase in intensity and before any headway could be made toward holding the fire in the two-story building the lumber piles beyond the low building took fire and from then on the fire department was faced with a hopeless task.

The building was completely destroyed as well as a large amount of the lumber on the far and near sides of the building.

The Editor's ideas on handling this fire will be given in the next issue of FIRE ENGINEERING.

Rockland County Firemen to Meet

The fourteenth annual convention and parade of the Rockland County Volunteer Firemen's Association, will take place in Suffern, N. Y., on August 4. The forenoon will be devoted to a business meeting, at which time also Capt. Albert Sidney Johnson, veteran officer of the New York Fire Patrol, will talk on salvage operations and fire prevention. Capt Johnston's talk will be illustrated with motion pictures and a practical demonstation by the Nyack Fire Patrol, a member of the Association. Other interesting speakers are expected and may be announced later.

Under the direction of Ex-President Frank E. Wiley of Suffern, the local fire department will publish a souvenir program, which will be distributed gratis among the crowds and delegates. Capt. William Paul Babcock of the Nyack Fire Patrol has been appointed advertising solicitor and is now making his rounds among apparatus and supply manufacturers. Departing from the rigidity of some conventions, the committee in charge will afford its advertisers an opportunity to demonstrate their equipment as a regular part of the day's proceedings. This is done because it is felt the firemen owe much to the producers of equipment which makes for efficiency and safety in their operations.

The parade will be at 2 p. m. Beside the unusual display and demonstration of fire fighting equipment and supplies, another unusual feature will be an exhibit of much of the fire apparatus of the county, all visiting apparatus being parked on the parking grounds of the Lafayette Theatre from 11:30 a. m. until 1:30 p. m., thus showing a large part of the quarter million dollars worth of equipment supported for the protection of the entire country. This will be of particular interest to the citizens of the county, as through the efforts of the Association a system of calls has been worked out whereby any one department may on short notice have all the available apparatus needed to combat a conflagration.

Railroad Rates, N. Y. Firemen's Convention

The following round trip railroad rates have been secured for those attending the 54th annual convention of the Firemen's Association of the State of New York, which takes place at Alexandria Bay, N. Y., on August 17 to 20:

Albany	$12.12
Buffalo	15.20
Elmira	12.89
Utica	7.01
New York City	19.82
Rochester	11.49
Syracuse	7.14
Binghamton via Albany	19.83
Plattsburg via Albany	21.18

These rates are from central points, and those leaving from intermediate stations should add thereto the round trip fare from their local stations. An identification ticket must, of course, be secured from the local agent to take advantage of the special rates.

It is urged by Secretary Fred A. Davis, Fort Edward, N. Y., that those wishing reservations, write at once to F. Howard Scott, chairman housing committee, Chamber of Commerce, Alexandria Bay, stating whether hotel or private house is desired, number in party, and the length of stay.

Referring to the convention, Secretary Davis writes:

"Those preferring to travel by motor coach, 'The Colonial Coach Lines' of Watertown maintain service and quote round-trip rates from Binghamton north and from Plattsburg west. Those traveling by automobile will find good roads all the way.

"It is too early to give the program of entertainment, but the citizens of Alexandria Bay promise there will be nothing lacking, and they are going to take care of the ladies, too. The business sessions will be very interesting and profitable also.

"It is the earnest wish of the officers of this Association that every firemanic organization in the state will be represented at this convention, and all who have been delegates in past years are requested to continue their membership to assist in the work of maintaining the Home at Hudson, and to promote the general welfare of the volunteer firemen of the state."

Rumored Urquhart to Resign from Amdyco

Rumors have been heard to the effect that R. M. Urquhart, president of the Amdyco Corporation, large manufacturers of foam generating apparatus and foam chemicals for use in fire fighting, will resign from that company on the 1st of August this year.

At this time no definite announcement has been made regarding the anticipated resignation of President Urquhart.

Mr. Urquhart has been closely identified with the development of the Amdyco Corporation as he first brought the proposition to the American Dyewood Company in 1922 and worked with them on the development of Amdyco until the product was ready for the market. He then went with the American Dyewood Company as sales manager of their Amdyco Department.

Due to the increased demand for Amdyco and the need of an engineering service to better serve the public, Mr. Urquhart put his efforts into the organizing of the Amdyco Corporation. The great growth in the sales of this concern during the past year is largely due to Mr. Urquhart's persistent work.

Mr. Urquhart has offered neither to deny nor confirm the above rumor regarding his resignation.

New York's Active Salvage Superintendent

Contrary to popular conception, the life of a salvage corps patrolman is void of the thrill of removing beautiful waxen figures from the show windows of apparel shops—it is hard work continually, and James O. Schwank, the superintendent of New York City's salvage corps is to be found on the job at any hour of the day. He stands silhouetted against the flames of a third alarm fire which occurred at 101 Bowery. Superintendent Schwank is well known as the president of the Patrol Officers' Association which meets at New Orleans in conjunction with the convention of the International Association of Fire Engineers.

New Jersey Chiefs Have Quarterly Meeting

The quarterly meeting of the New Jersey State Fire Chief Association was held in Wildwood, N. J., on July 10. The address of welcome was given by Mayor Edward S. Culver of Wildwood, and the response was given by Chief Charles W. Greenfield, president of the association, who presided at the meeting. At the last meeting held President Greenfield was unable to attend on account of sickness.

Rev. DeWitt C. Cobb, an ex-chief, and a member of the association, gave an address. Various questions were presented by members of the firemanic body, and ably discussed. Chief Harry Francis, of New Brunswick, chairman of the school committee, presented his report. A report was also presented by R. W. Cadman, chairman of the standardization committee.

Chief Charles Nickerson of Wildwood was host to the visiting chiefs and entertained them at luncheon. In the afternoon, there was a large parade, as the day was designated as Firemen's Day in that city, and numerous prizes were awarded.

Corning, Ia., Insures Firemen.—Each one of the firemen in Corning, Ia., has been insured for $1,000 by the city council.

Modern Fire Alarm Signalling

Manual Standard Storage Battery Switchboards—Installation, Operation and Upkeep

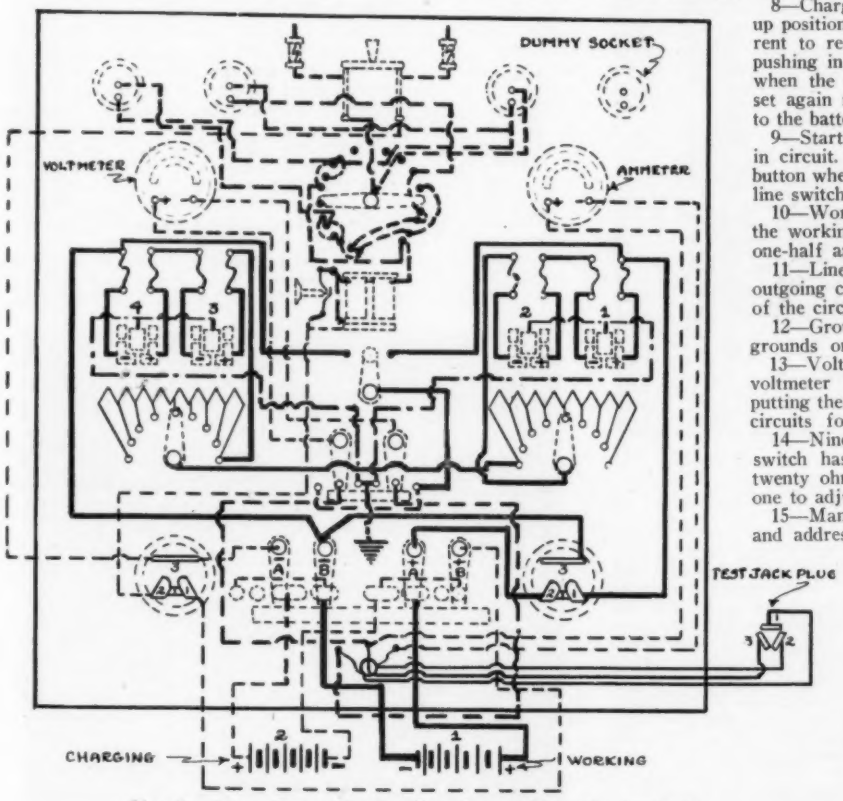
By E. W. KEIRSTEAD, E. E.

THE author, in this article, which is the sixth of a series, describes the manual standard storage battery switchboard used in connection with fire alarm installations. He has had practical experience in fire alarm work, and he will answer questions on this subject submitted by the readers free of charge. The only condition is that a stamped envelope must be enclosed for reply.

Description, Installation, Operation and Servicing

As fire alarm storage batteries must be charged every other day some means must be provided in order to take care of the charging period, and as each battery may be of a different voltage we must be able to charge any battery at a standard rate. Storage battery switchboards are specially designed for this purpose and contain all the necessary controlling equipment to take care of the proper charging.

Storage battery switchboards are built for from one to ten circuits and are either manually or automatically controlled. They are also either standard or combination boards and are capable of doing different work. The standard manual type switchboard will be treated with in this article.



Sketch 14. One Circuit Four-Loop Manual Standard Switchboard

Description of Apparatus on Standard Boards

Sketch No. 13 shows a single circuit two-loop standard manual switchboard. The figures shown in the circles will assist in describing the part and also explaining what it is for.

No. 1. Charging circuit knife switch. For connecting and disconnecting the charging current of 600-volt type.

No. 2. Charging circuit fuses. These fuses protect the charging circuit from too high a voltage and are of the voltage used to supply the board.

No. 3. Carbon resistance lamps. Used for varying the charging voltage.

No. 4. Seven-step resistance switch. Used for arranging the resistance lamps in proper order.

Table of Connections on 7-Point Switch

Position No. 1. Short circuit no lamps cut in the circuit.
Position No. 2. Three lamps in parallel.
Position No. 3. Two lamps in parallel.
Position No. 4. One lamp only cut in the circuit.
Position No. 5. Two lamps in parallel and one in series.
Position No. 6. Two lamps in series.
Position No. 7. Three lamps in series.

5—Voltmeter for reading the voltage of either the charging or the working circuit.

6—Ammeter for reading the amperage of either the working or charging circuits.

7—Jack test plug inserted in working or charging test jack to obtain the voltage or amperage of the working or charging circuit. Some types of switchboards use a switch for this purpose.

8—Charging relay, this relay must be in an up position in order to allow the charging current to reach the battery. It is attracted by pushing in the starting button and will release when the current stops flowing, having to be set again manually. It is an added protection to the batteries.

9—Starting button for connecting the relay in circuit. It is necessary to push in on this button when you desire to charge after the main line switch is closed.

10—Working circuit line fuses for protecting the working line from abnormal currents. Of one-half ampere type.

11—Line pin switch, used for cutting out the outgoing circuit, and for grounding either side of the circuit for testing purposes, etc.

12—Ground test switch for testing for grounds on either side of the line.

13—Voltmeter control switch, for cutting the voltmeter in for testing for grounds or for putting the voltmeter in the charging or working circuits for getting the battery readings.

14—Nine step line resistance switch. This switch has nine positions each one putting twenty ohm resistance into the circuit enables one to adjust current flow.

15—Manufacturers nameplate, giving name and address of manufacturer enabling one to address him for information, etc.

16—Charging test jack, jack test plug inserted into this jack will give charging voltage and amperage.

17—Working test jack, jack test plug inserted into this jack will give working battery voltage and amperage.

18—Battery change over gang switch, switch allows transferring of the batteries without opening or interfering with the working batteries.

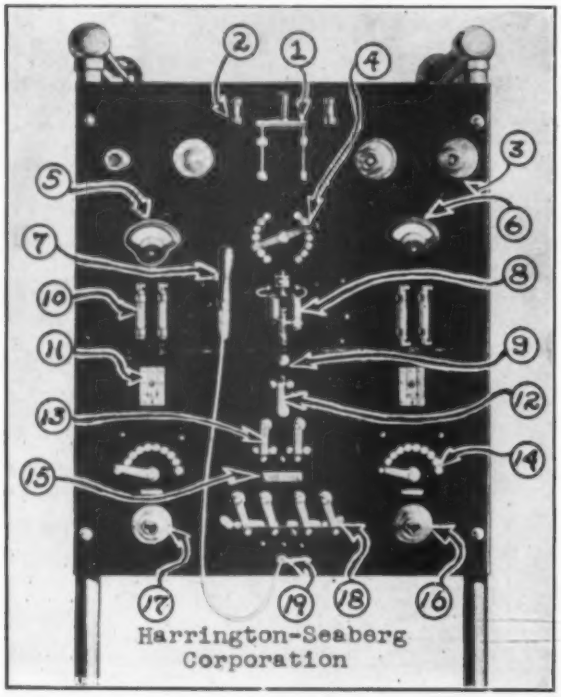
19—Test jack plug cord bushing for protecting the test cord and keeping it from cutting on the slate panel.

The apparatus on these boards is of a fine quality and is easily damaged and it should never under any circumstances be handled roughly. Never allow too many men to operate the switchboards as one or two men will soon become able to take care of the boards and will be more acquainted with them than a number of different men.

In arranging to get a new switchboard, always figure to obtain one which will allow an increase to the present system and it is good policy to have one which will be large enough to allow at least four or five spare or future circuits. For instance, if you have a six-circuit board at present and you are intending to get a new one get one having ten circuits as it will be one unit and will provide four future or spare circuits. Failure to do this will mean a later addition of a four or five-circuit board. You will have two boards which will not be of the same size and will always look out of proportion. A little forethought will show you things which will enable you to have a well-balanced office, something of which you can be well proud.

In sketch No. 14 you will find the wiring diagram of a circuit switchboard of the four-loop type. The binding posts are marked and the working circuit is shown in a full line; the charging circuit is shown as a broken line. A description of the working circuit will be given first and the charging circuit following.

Circuit No. 1 enters on the pin switch No. 1, positive position, pass through the switch plate and going on up to the line fuse, through the fuse and down to 1 on the test jack continuing on through 2 on test jack to A positive on the battery transfer switch. From here it passes through the battery No. 1 to B



Sketch 13. One Circuit, Two-Loop Switchboard of the Harrington-Seaberg Corporation

minus transfer switch continuing on up to pin switch No. 4 coming in on the minus or negative side. From here we go out on No. 4 circuit returning on the postive side and go through the pin switch and back out on No. 3 circuit returning positive again and going through the pin switch. We now see that the circuit runs through the 180 ohm line resistance switch coming in on No. 1 postion and passing on out through No. 2 or the switch handle, from here we go on through the No. 1 or the second 180 ohm line resistance switch and continue on up to pin switch No. 2 passing on through the fuse and coming back positive again on out, through the pin switch again and you come into 1 pin switch negative. This completes the working circuit as far as the feeding of the line goes. This circuit is shown in heavy full lines.

Charging Circuit Wiring

This circuit is shown in a heavy broken line and will now be given. Coming in positive from the generator we see that it passes through the charging fuse and goes down to the positive side of the main charging switch continuing on down to the 7-step resistance switch handle to whatever contact the switch is set on and goes through the lamps and comes on down one side of the relay going through the relay to the starting button post and to the relay contact post through the relay armature and straight down to 1 on the charging test jack. From here we go through the test jack and continue on to the B positive switch handle on the gang switch. We now come into the battery on the positive side and go through the battery and on up to A minus on the switch handle through the top of the test jack handle and on out through the main charging switch and fuse, and come back to the generator negative. This completes the charging circuit while it is under a charge.

Working Line Test Circuit

This circuit is shown by a thin solid line and will be followed through as the others have. You can see that by inserting the test jack plug we will open contacts 1 and 2 allowing the voltmeter and ammeter to be cut into working circuit. Nos. 1, 2 and 3 on the test jack and test jack plug correspond with each other and run through the test switch and through the voltmeter and ammeter. When the jack is plugged into the receptacle a reading will be obtained.

Charging Line Test Circuit

This circuit is practically the same as the one above and can be easily followed out on the print. In tracing out the circuits on the print it would be well to mark the different circuits in different colored lines, such as the working circuit in red and the charging circuit in green or blue and the test circuits in another color. This will enable you to follow the circuits a little easier and will show you at a glance where the different wires will run to.

Ground Test Circuit

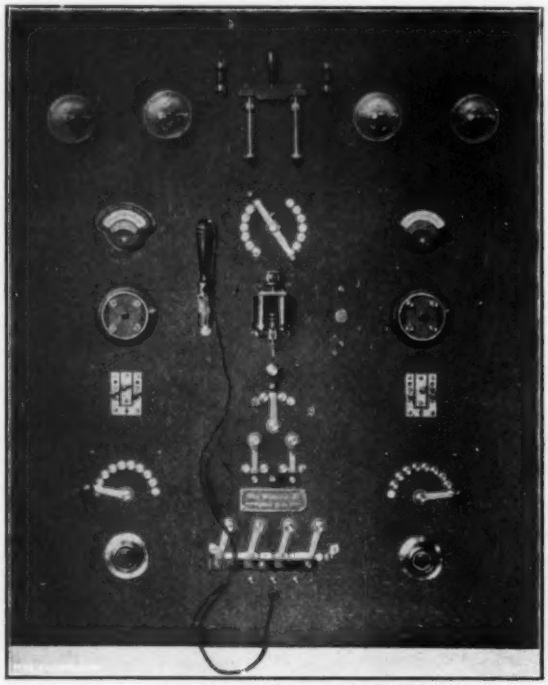
This circuit runs through the center of the pin switch and the three-point switch going down through the test transfer switch. One position of this switch cuts in the voltmeter and ammeter in the circuit for getting the working or changing readings and the second position cuts it in for obtaining ground test readings. The ground test line is shown in dot and dash lines of the same thickness as the test lines.

Installing of the Switchboards

The room selected for housing the switchboards should be of a size large enough to contain all the necessary fire alarm switchboards and should be clean and dry. The floor should be strong enough to carry the added weight and as even as is possible, this is to allow the switchboards to set square without a lot of shimming being necessary.

The iron pipe rack or wooden cabinet should be set up and particular care should be taken to see that the holes in the iron holders are lined up with the holes in the switchboards, and that the dimensions are right. The switchboards are heavy and it is not very pleasant to have the board raised up to find that you can not secure it because the holes do not line up right.

The wall braces should be long enough to allow the board to set away from the wall far enough so as to have a good working space in the back of the board. After your frame is up and secure,



Sketch 13A. Standard Two-Loop Switchboard of the Gamewell Company

you can have your board either raised up or lifted up by a number of men, being sure to set it on the brackets if they are provided. When board is up put the bolts through and tighten up the nuts enough to hold the board, but not set up tight. Use a

(Continued on page 732)

COURSE OF INSTRUCTION IN FIRE PROTECTION

AS GIVEN AT THE UNIVERSITY OF ILLINOIS

MECHANICAL INSTALLATIONS

By RAYMOND T. NELSON,
Engineer, Western Actuarial Bureau, Chicago

THIS fifteenth installment of the University of Illinois Course in Fire Prevention continues the consideration of a type of common and very important hazards which the chief has to combat in his fire prevention work:

INSTALLATION OF SMALL RANGES (Fig. 18)

Floor: Floor, under small ranges with legs *less than* 4 *inches high,* should be protected by two courses of 4-inch hollow tile crossed with boiler iron on top, or three courses of brick with the middle course laid crosswise and on edge, with ventilating spaces, left open at the ends, between. Protection should extend even with stove at the sides, front and rear and, in addition, if other than gas, electricity or liquid fuel is used, floor, for a distance of 18 inches in front, should be protected by a layer of ¼-inch asbestos covered with sheet metal or its equivalent.

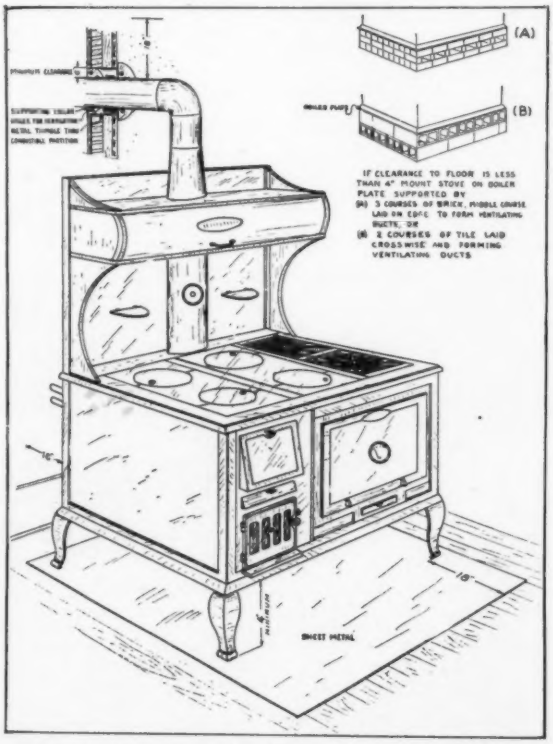

(A)
(B)
IF CLEARANCE TO FLOOR IS LESS THAN 4" MOUNT STOVE ON BOILER PLATE SUPPORTED BY
(A) 3 COURSES OF BRICK, MIDDLE COURSE LAID ON EDGE TO FORM VENTILATING DUCTS, OR
(B) 2 COURSES OF TILE LAID CROSSWISE AND FORMING VENTILATING DUCTS
SHEET METAL

Fig. 18. Arrangement and Clearance of Small Range

Floor, under small ranges with legs *not less than* 4 *inches high,* if combustible, may be protected by a layer of sheet metal in place of the materials above specified.

Lateral Clearances: Clearance between range and combustible materials at sides, front and rear should conform to the following minimum requirements:

At sides and rear	18 inches
In front	48 inches

Note 1: If clearances are less than those specified, combustible woodwork should be protected by a layer of ⅛-inch asbestos or its equivalent covered with metal so supported as to leave an air space of one inch; or by a covering of ¼-inch asbestos or its equivalent supported so as to leave an air space of one inch. In no event should the clearance be less than one-half of those specified above.

Stovepipe: Clearance between stovepipe and unprotected combustible material should be not less than 18 inches.

Stovepipes passing through combustible partitions, windows, sides of buildings. ceilings or roof should be provided with at least 6 inches of clearance to combustible materials.

INSTALLATION OF LARGE RANGES (Fig. 19)

Floor: Floor, if combustible, should be protected by two courses of 4-inch hollow tile crossed with boiler iron on top, or three courses of brick with middle course laid crosswise and on edge, with ventilating spaces, left open at the ends, between. Protection should extend even with range at the sides, front and rear and, in addition, if other than gas, electricity or liquid fuel is used, floor, for a distance of 18 inches in front should be protected by a layer of ¼-inch asbestos covered with sheet metal or its equivalent.

Lateral Clearances: Clearance between range and unprotected combustible materials at sides, front and rear should conform to the following minimum requirements:

At sides and rear	18 inches
In front	48 inches

Note 1: If clearances are less than those specified, combustible woodwork should be protected by a layer of ⅛-inch asbestos or its equivalent covered with metal so supported as to leave an air space of one inch; or by a covering of ¼-inch asbestos or its equivalent supported so as to leave an air space of one inch. In no event should the clearances be less than one-half of those specified above.

Breeching or Smokepipe: Clearance between metal breechings and unprotected combustible materials should not be less than 18 inches.

Note: If clearance is less than 18 inches, pipe should be covered with at least 2 inches of magnesia lagging or woodwork protected as above. In no case should the clearance be less than 9 inches.

Ventilation: Hood should be constructed of No. 16 gauge iron

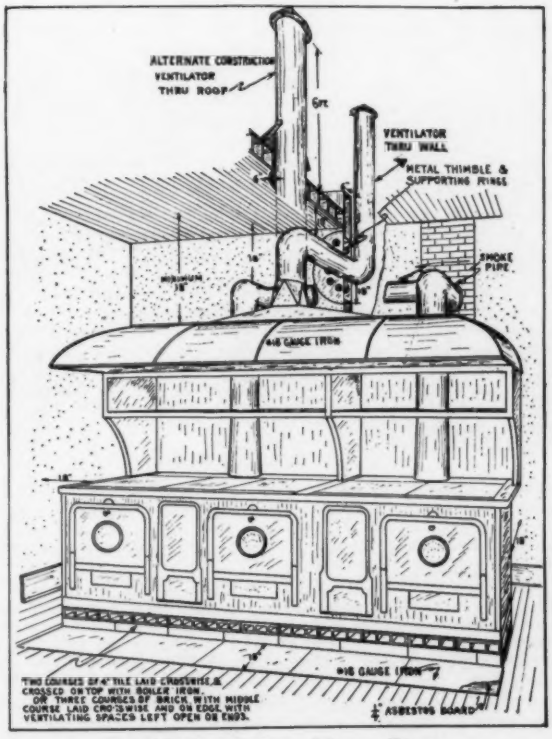

ALTERNATE CONSTRUCTION VENTILATOR THRU ROOF
6Ft
VENTILATOR THRU WALL
METAL THIMBLE & SUPPORTING RINGS
SMOKE PIPE
MINIMUM 18"
18"
No 16 GAUGE IRON
No 16 GAUGE IRON
TWO COURSES OF 4" TILE LAID CROSSWISE & CROSSED ON TOP WITH BOILER IRON, OR THREE COURSES OF BRICK WITH MIDDLE COURSE LAID CROSSWISE AND ON EDGE WITH VENTILATING SPACES LEFT OPEN OR ENDS.
¼" ASBESTOS BOARD

Fig. 19. Installation of Large Range

securely riveted to angle iron frame. Clearance between top or hood and unprotected combustible material should be at least 18 inches. If clearance is less than 18 inches, hood should be covered with at least 2 inches of asbestos cement. In no case should clearance be less than 6 inches.

Pipe from hood should enter 8-inch brick flue used for no other purpose, or metal flue outside of building with vertical clearance of 18 inches and lateral clearance of 6 inches from combustible materials and extending 6 feet above roof.

(To be continued)

NEW MADISON SQUARE GARDEN HAS UNUSUAL FIRE PROTECTION

How This Largest Indoor Arena in New York City Is Guarded from Fire—Protection of Life Also Taken Care Of

By WILLIAM JEROME DALY

FOR the enlightenment of the fire fighting profession, FIRE ENGINEERING *presents in this article, information about the newest and the largest structure for public assemblages in the city of New York, the New Madison Square Garden.*

The New Madison Square Garden, although not located near Madison Square, in the city of New York, is a four story structure, of concrete, steel and yellow brick, trimmed with limestone, with a solid roof and located on the west side of Eighth avenue, between 49th and 50th streets, on the edge of the theatrical district.

It is the most modern and the most commodious place of public indoor assembly in the city of New York. It has a total capacity of approximately 20,000 persons. It is surpassed in capacity only by the Brush Stadium at the Polo Grounds, the Yankee Stadium in The Bronx and Ebbetts Field in Brooklyn, but these are open-air structures.

The new Garden was erected as a result of the sale and demolition of the original Madison Square Garden, famous as the mecca of New York City's monster political conventions, exhibitions, circuses, etc.

Pronounced Last Word in Fire Protection

The New Garden has been pronounced "the last word in fire protection" which of course means protection of life as well. The building stands back from the west side of Eighth avenue about 150 feet. It covers an area of approximately 200 x 375 feet. The standpipe system consists of six 4" risers which are supplied by a 6" pipe line which encircles the basement and is fed by a 3,500 gallon pressure tank.

The tank is made of steel and is located in a fireproof room in the attic of the building. By means of an air compressor in the boiler room, there is maintained at all times a minimum pressure of 30 pounds on the standpipe system. This system has a total of 28 outlets of 2½ inch size. To each of the 28 outlets is attached 100 feet of canvas hose. The nozzles have a 5/8" tip. The 28 standpipe outlets are distributed throughout the building as follows: 18 in the auditorium, 6 on the roof and 4 in the basement.

Each standpipe outlet is a complete fire station in itself. The hose is housed in a glass cabinet, flush with the brick wall. A small blue light indicates the location of the hose reel. There is also an axe, a six foot hook and a 3 gallon extinguisher at each station.

The standpipe system may be supplied by the fire department through two siamese connections; one at 49th Street and the other at the 50th Street corners.

Automatic Sprinkler System

The automatic sprinkler system contains 434 heads. They cover every square foot of the basement area. It is the Grinnell System and is set for 155 degrees. The sprinklers are supplied by two, 4" pipes connected to the public water main at 49th street and at 50th street.

The sprinkler heads in the boiler room in the basement are set to fuse at 268 degrees. The refrigeration room has six Jumbo heads, controlled manually by a valve in the boiler room, for the purpose of providing a water blanket in the event of a break in the ammonia system. The boiler room and the refrigeration room are segregated by a brick wall in which there is a fire proof door, automatically closed by the functioning of the fusible links.

The necessity for such an extensive sprinkler system in the basement is apparent, when it is remembered that the basement is used for commercial and industrial exhibitions; storage of hay, straw and feed for animals stabled there in connection with circuses, rodeos and horse shows; automobile shows, dinners, receptions, meetings and a variety of kindred uses.

There are 24 manual fire telegraph signal boxes throughout the building, connected directly with the fire telegraph central station. The arena, mezzanine and gallery are constructed of iron and concrete. The benches are iron frame, stationary, with hinged wooden seats.

Arrangement of Exits

The arena has five exits; four of them are 45 feet in width and are located at the four corners of the building; the fifth one is 25 feet in width and is located in the middle of the Eighth Avenue wall, opening out to a lobby leading to Eighth Avenue through the arcade of a hotel now being constructed in front of the Garden.

The mezzanine exits are also in the four corners and are seven feet wide, enclosed in a brick fire tower and lead to the arena floor to the 45 foot exits from the arena. The mezzanine also has four exterior iron balconies to an exterior iron stairway 7 feet wide, which leads to a semi fire tower on the outside of the building.

The gallery, from the standpoint of making a quick exodus, is unique, in that its ingress and egress are wholly exterior and are independent and separate from the arena and the mezzanine. The gallery is approached by an outside stairway enclosed in a fire tower. Departure is made the same way. This serves a commercial as well as a fire protection purpose. It means that the gallery "Gods" cannot invade the more expensive seats in the mezzanine or in the arena.

The capacity of the New Madison Square Garden is divided as follows:

	Seats		
Arena	7,000	*Arena Floor	4,000
Mezzanine	786	Total	20,469
Gallery	6,083		
Basement	2,600		

*Added to the arena floor for boxing bouts or conventions.

Three Events can Go On at Once

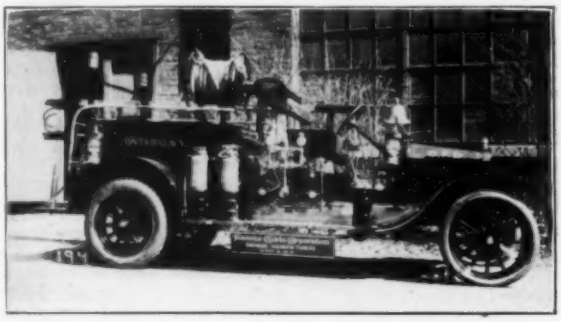
It is possible for this new structure to accommodate, at any time, its maximum capacity attendance, by the following combination of events, which the structure is designed to hold: Basement—dinner, or dance, or theatrical performance, show or bazaar, public meeting or convention, exhibition, etc.; on the arena floor—boxing bouts, or athletic games, basketball, tennis, etc.; on the roof—out-of-door sports of all kinds.

The arena floor is constructed of cement, marble chips and steel filings, making it non-skid. This combination is set in flags, allowing for expansion. The center of the arena floor is portable permitting access to the ammonia pipes for freezing water for the hockey matches and the ice skating races.

There is a ventilating system of blower fans in the attic, but the New York State Boxing Commission prohibits smoking during the boxing bouts.

The ban on smoking is welcomed by the fire department officials, but it does not prevail at the instigation of the fire department, except when conditions attending exhibitions make it necessary.

Although the New Madison Square Garden is modern and safe, the fire department has not however relaxed in its vigilance. Every large assemblage is "covered" by the Fire Department of Public Assembly, under the command of Capt. John J. McCarthy of H. & L. Co. 43. Such assemblages as the Six Day Bicycle Races, the Horse Shows, etc., are protected by firemen assigned to patrol the building.



New Childs chemical and hose car recently delivered to the fire department of Ontario, N. Y. The apparatus is equipped with double chemical tanks and is mounted on a Ford one ton chassis. It has been accepted and placed in service.

I. A. F. E. Convention Plans Completed

Directors Meet at New York and Finish Details in Connection With New Orleans Meeting to be Held in October

A SPECIAL meeting of the Directors of the International Association of Fire Engineers was held at the Advertising Club New York Friday, July 9th, to complete arrangements for the coming convention to be held at New Orleans on October 19th to 22nd.

Those in attendance were: President, James Armstrong, Chief of Fire Department, Kingston, Ontario; First Vice President, Thos. R. Murphy, Chief of Fire Department, San Francisco; Secretary, James J. Mulcahey, Chief of Fire Department, Yonkers, N. Y.; Chairman of Exhibit Committee, Wm. F. Daley, Chief of Fire Department, Brockton, Mass.; Treasurer, Peter B. Carter, Chief of Fire Department, Collingswood, N. J.; Chairman of Picture Committee, Jay W. Stevens, State Fire Marshal of California, San Francisco, Calif.; Director, George L. Johnson, Chief of Fire Department, Waltham, Mass.; I. H. Case, Chairman of Publicity Committee; Chief Wm. F. Hedden, Fire Department, Buffalo; Traffic Manager, Geo. F. Cobb, Boston, Mass.; Fred Shepperd, Managing Editor, FIRE ENGINEERING New York.

Topics for Convention

Since the last meeting of the directors the following additional topics have been assigned: "Organization of Volunteer Fire Departments," by Chief Coates of the Burlington, Ontario, Fire Department; "Water Mains and Fire Streams" by Fred Shepperd, Managing Editor, FIRE ENGINEERING, New York.

Chief John Kenlon, of the New York Fire Department, made a suggestion by correspondence that a paper be presented on "Elementary Training of Firemen," by State Fire Marshal John G. Gamber, of Illinois.

By unanimous vote the suggestion was accepted and the Secretary instructed to communicate with Mr. Gamber inviting him to present such a paper.

In view of Chief John Kenlon's wide experience in Traffic Problems it was unanimously voted that he be invited to present a paper on this subject at the New Orleans meeting. (Subsequet to the meeting Chief Kenlon was interview and consented to read a report which he prepared for the Mayor of New York on this subject.)

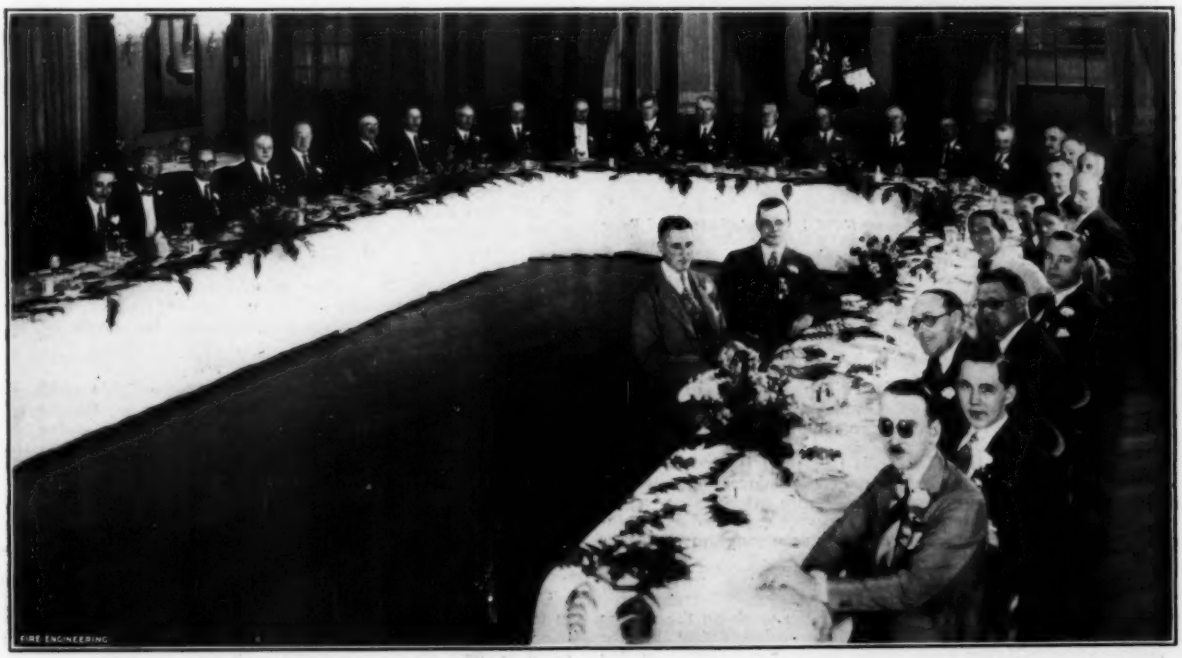
To Develop Co-operation with State Vice Presidents

In order to secure the fullest co-operation from the State Vice Presidents in the work of the association and particularly in building up its membership, a committee consisting of Chiefs Johnson, Murphy, Mulcahey, Fire Marshal Stevens and Mr. I. H. Case was appointed to develop such co-operation. It is the intention of the committee to prepare specific instructions which will guide the State Vice Presidents in their work.

Sub-committees will be appointed in each state by the State Vice President to reinforce the State Vice President in performing the work assigned to him.

To Change Name of Association

In view of the confusion resulting from the present name of the association and particularly since there has been such a widespread movement to drop the title "Chief Engineer" and use that of "Chief" as the head of fire departments throughout the country, it was deemed necessary that some change should be



Dinner Tendered by Metro-Goldwyn-Mayer Corporation to Officers and Directors International Association of Fire Engineers at Hotel Roosevelt, N. Y. C., Friday, July 9, 1925.

Left to Right around table: I. Herbert Case, FIRE ENGINEERING, N. Y., Chairman Publicity Committee, I. A. F. E.; Wm. C. Ingold, Chief, F. D. Edgewater, N. J.; Jos. H. Green, Vice Pres., Eureka Fire Hose Mfg. Co.; N. Y. C.; Hubert J. Tracey, Chief Bureau Repairs and Supplies, Fire Dept., N. Y. C.; John J. Gilday, Chief, F. D. Hoboken, N. J.; Daniel E. Johnson, Chief F. D. Bridgeport, Conn.; Geo. F. Cobb, Boston, Mass., Traffic Manager, I. A. F. E.; Wm. F. Daley, Chief F. D. Brockton, Mass., Chairman Exhibit Committee, I. A. F. E.; Geo. L. Johnson, Chief F. D. Waltham, Mass., Director I. A. F. E.; Jas. J. Mulcahey, Chief, F. D. Yonkers, N. Y., Secretary, I. A. F. E.; Jay W. Stevens, State Fire Marshal of Cal., San Francisco, Chairman I. A. F. E. Picture Committee; Jas. Armstrong, Chief F. D. Kingston, Ont., President I. A. F. E.; Major Edward Bowes, N. Y. C., Toastmaster; John Kenlon, Chief F. D. New York City; Thos. R. Murphy, Chief F. D., San Francisco, Cal., 1st Vice Pres., I. A. F. E.; E. J. Kenny, Honorary Deputy Chief, Fire Dept., N. Y. C.; Peter B. Carter, Chief F. D. Collingswood, N. J., Treasurer, I. A. F. E.; Wilbur F. Mallalieu, General Manager, National Board of Fire Underwriters, N. Y. C.; Wm. F. Hedden, Chief F. D. Buffalo, N. Y.; W. W. Cohen, Hon. Deputy Chief, F. D. N. Y. C.; W. Jerome Daly, N. Y. C.; Robt. H. Mainzer, Hon. Deputy Chief Fire Dept., N. Y. C.; Manfred L. Neumoegen, Hon. Deputy Chief, Fire Dept., N. Y. C.; Howard Dietz, Publicity Mgr., Metro-Goldwyn-Mayer; Jack Wilson, Vaudeville Entertainer; Hickman Price, Will Hays Organization; Don Clarke, Metro-Goldwyn-Mayer; William Ferguson, Metro-Goldwyn-Mayer; Frank Rohrenback, Metro-Goldwyn-Mayer; J. S. McLeod, Metro-Goldwyn-Mayer; (In center) Karl M. Mann, FIRE ENGINEERING, N. Y. C., Fred Shepperd, FIRE ENGINEERING, N. Y. C.

made so that explanation would not be necessary when the association had dealings with anyone not familiar with its make-up.

At the request of members of the Board the subject was thoroughly discussed and Chief Carter moved that the name of the association be changed to The International Association of Fire Chiefs.

The vote for the change was unanimous. The directors having thus voted the change, the question will be placed before the association at its next convention in New Orleans.

Dues to be Reconsidered

As has been evident since the founding of the association, a large percentage of the small town chiefs cannot be expected to attend the conventions of the International Association of Fire Engineers regularly, but in order that the association might perform its work most effectively it is very necessary that the chiefs in smaller communities be active in the association even if they cannot arrange to attend conventions. In order to overcome the obstacle of their non-attendance, it was suggested by Jay Stevens that the constitution be so altered as to permit a special low membership fee for non-attending members. The plan suggested would entail a charge of two dollars membership fee to non-attending chiefs, and to those who attend the convention an attendance charge would be added to the two dollars, sufficient to make the total fee the same as the present membership fee. In other words, those not attending would pay a charge of two dollars while those attending would pay the two dollar charge plus the difference between that and the present dues.

A committee consisting of Chiefs Johnson, Hedden, Mulcahey

At the I. A. F. E. Directors' Meeting in New York.
Left to Right: Chief Geo. A. Johnson; Chief J. J. Mulcahey; Chief Peter Carter; Chief T. R. Murphy; George Cobb; Chief Jas. Armstrong; Chief Wm. Daley; Fire Marshal Jay Stevens; Chief G. H. Hedden; Fred. Shepperd; Howard Dietz; I. H. Case.

and Jay Stevens was appointed to consider the subject and report to the New Orleans convention.

Herbert Hoover May Attend Convention

Jay Stevens reported that there is a liklihood of Herbert Hoover, U. S. Secretary of Commerce, attending the New Orleans Convention and speaking on the subject of "Fire Waste and Fire Prevention."

In the event that Mr. Hoover is present it is planned that a luncheon be held Wednesday noon of the coinvention week, at which Mr. Hoover will speak to the entire attendance.

Jay Stevens and Secretary Mulcahey were appointed as a committee and empowered to act in arranging the program to accommodate Mr. Hoover.

Progress of Motion Picture

Jay Stevens reported the progress of the work on the motion picture, "The Fire Brigade," which is being filmed by the Metro-Goldwyn-Mayer Corporation under the auspices of the Internatioaal Association of Fire Engineers. According to Mr. Stevens the film is about two thirds complete and will be ready for showing at the New Orleans Convention where it will be presented for the first time. From accounts the film is going to be a real feature picture and will be away above expectations.

Jay Stevens and Chief Evans of New Orleans were appointed as a committee to arrange for the showing of the picture, fitting it in with the other parts of the program.

Incidentally, the association gave a rising vote of thanks to Chief R. Scott of the Los Angeles Fire Department, for the unstinting co-operation he has afforded the makers of the film throughout the work.

At one time Chief Scott loaned the producers forty fire companies with full complement of men for a period of four days. Two days were spent in instructing the men in their work in connection with the film, the third day to a dress rehearsal and the fourth day to operation during the filming of the picture.

Jay W. Stevens was also given a rising vote of thanks for the time and effort devoted toward making the picture a success.

Chairman of the Membership and Publicity Committees, Mr. I. H. Case, reported progress made and presented plans for future work in building up the membership of the association and developing publicity for the film.

Official Button Adopted

The official button for members of the association was adopted and the secretary instructed to purchase a necessary supply of these buttons for members. There will be but one type of button which may be worn by both active and associate members.

Reports of Exhibit Committee

Chairman Daley of the Exhibit Committee reported progress in developing this feature of the New Orleans meeting. At the present time the following concerns have reserved space.

Amdyco Corporation, New York, N. Y.
Eureka Fire Hose Mfg. Co., New York, N. Y.
Wheeler-Schebler Carburetor Co., Indianapolis, Ind.
Johns-Manville, Inc., New York, N. Y.
The Gamewell Co., Newton Upper Falls, Mass.
Mine Safety Appliances Co., Pittsburgh, Pa.
Ahrens-Fox Fire Engine Co., Cincinnati, Ohio.
Elkhart Brass Mfg. Co., Elkhart, Ind.
The Larkin Mfg. Co., Dayton, Ohio.
C. G. Braxmar Co., New York, N. Y.
Foamite Childs Corp., Utica, N. Y.
American Fire Equipment Co., Boston, Mass.
R. D. Wood & Co., Philadelphia, Pa.
American-LaFrance Fire Engine Co., New York, N. Y.
The Akron Brass Co., Wooster, Ohio.
Haskell Removable Oil Trough Co., Chelsea, Mass.
Northern Fire Apparatus Co., Minneapolis, Minn.
The Seagrave Corporation, Columbus, Ohio.
Everson-Ross Co., Inc., New York, N. Y.
FIRE ENGINEERING, New York, N. Y.

Of the available floor space in the exhibit hall 13,499 feet have been sold with 5,015 square feet still remaining to be sold.

Manufacturers are urged to make their reservations at once for but one quarter of the space remains available with the convention still three months away. Full details on exhibit hall space may be secured from the Chairman, Chief Wm. F. Daley, Fire Headquarters, Brockton, Mass.

Traffic Manager's Report

Traffic Manager George F. Cobb reported special arrangements had been made whereby the fare and a-half coupons will be sent to the members of the association prior to the convention so that they will be able to eliminate a lot of the trouble heretofore encountered in securing the special fare.

Treasurer's Report

Treasurer Peter B. Carter submitted a preliminary report showing a balance on hand in bank of $12,259.81 which, together with Liberty Bonds totalling $18,000, make the assets of the association $30,259.81.

Fire Waste Contest

Louis B. Mayer, President of the Metro-Goldwyn-Mayer Company has donated three handsome silver cups, the largest to be presented to a large city having the best fire loss record for the year while the second size will be presented to the medium size city having the best record and the smaller size to the smaller city having the best fire loss record.

A committee was appointed to set forth the contest rules as follows: Chief Armstrong, Jay Stevens, I. H. Case, Ralph Richman and Fred Shepperd.

Banquet and Boat Ride

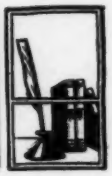
On Friday evening, at eight o'clock, a banquet was provided in the Hotel Roosevelt by the Metro-Goldwyn-Mayer Corporation to the Directors and guests. Those in attendance are listed beneath the picture herewith of the banquet.

During the course of the banquet a number of prominent guests were called upon to talk. The host, Chief Kenlon, announced that he would stand with the Chiefs in the work of building up the association through funds secured from the motion picture "The Fire Brigade."

Mr. Wilbur F. Mallalieu, General Manager of the National Board of Fire Underwriters, New York City, said that his organization was always ready and willing to co-operate to its fullest extent with the fire chiefs in their work.

Saturday morning a number of the chiefs, including Chief Ross B. Davis of the Philadelphia Fire Department, who reached the city Saturday morning, were given a ride around New York harbor and Manhattan Island on the Fire Boat John Purroy Mitchell, one of the newest fire boats of the New York Department.

WITH THE EDITOR



The Resort Hotel Menace

The regrettable disaster, in which the Twilight Inn, a large frame summer hotel in the Catskill Mountains. New York, was destroyed by fire in the early morning hours of July 14, with heavy loss of life, again brings to the fore the menace of the resort hotel.

These structures, huge, rambling affairs built of the most inflammable materials, are a constant menace to the lives and property of the guests who patronize them. Besides their flimsy construction, they are usually in situations comparatively isolated, and remote from fire departments, and the fire-fighting facilities provided, as in the case of the Twilight Inn, are of little value, once the flames get a good start, owing to the conditions favorable to the rapid spread of the fire.

Naturally, the owners of these shacks—for, no matter how palatial in outward appearance, that is what such buildings are—put up the structures with as little first cost as possible. A substantial and fire-resistant building would cut into the percentage of profit on the funds invested, and so a cheap and gaudy frame structure is made to suffice, irrespective of the peril to the lives of those who take the chance of temporary occupancy.

Probably the only way conditions in summer resort hotel building conditions will be remedied, will be through legislation prohibiting construction of these hostelries of other than fire resistant materials.

When the time comes that all states shall pass uniform ordinances providing for fire resistant construction for all resort hotels the ever increasing list of destructive fire, with heavy loss of life, will be a thing of the past.

The Obvious Remedy

As usual, various investigations will follow the terrible explosion of munitions of war at the United States Navy Arsenal near Dover, N. J., on July 10, when lightning blew up two magazines, containing 1,375 tons of TNT, and started a wholesale bombardment of the surrounding countryside.

The announced intention of the War and Navy Departments to investigate all arsenals is laudable and necessary, but the one remedy for such intolerable conditions would seem to be the immediate removal of all such Army and Navy arsenals and amunition bases from populous centres to spots remote from human habitation.

Such investigations and the declarations by officials that all arsenals containing immense quantities of explosives are to be made "safe," are all very well, but no amount of precaution can render large collections of munitions free from danger of lightning stroke, the cause of the disaster in New Jersey.

While such peril exists, the continuation of these dangerous collections of explosives near human habitations is little less than criminal, and the removal of them to locations where a blow-up will not cause wholesale death, and destruction of private property, is imperative.

The duty of the Government is clear and well defined in this matter and the quicker the Army and Navy Department authorities act to protect citizens from a like occurrence to that near Dover, N. J., the better for all concerned.

A Safer Fourth

Celebrations this past Fourth of July were marked with greater safety than any of recent years. This is due almost entirely to the drive which has been conducted throughout the country during past years to eliminate deaths and accidents in connections with the careless use of fireworks.

But fireworks have not been eliminated entirely. Even in New York, particularly the suburban sections, fireworks were very much in evidence, including the dangerous paper balloons, skyrockets and Roman candles. The use of fireworks has been and always will be linked with recklessness. The inherent daring in the American youth has an opportunity for exercising itself in the firing of crackers and other Fourth of July fireworks. And this daring, or recklessness, will exert itself in discharging fireworks even though the discharge of them is prohibited by law.

Possibly the entire reduction in the general use of fireworks has been accomplished through prohibiting the sale of them in cities. But even this cannot be expected to completely eliminate the use of such explosives.

Cities may not license dealers in fireworks but the small villages around, which have no restrictions, permit the sale of such, and it is not a difficult task for the city dwellers to drive beyond the city limits and secure almost anything they want in the way of fireworks.

The only remedy for the problem, which can be expected to produce thorough results is the regulation of the sale of fireworks by the state, or even by the government. If a state prohibits the sale of fireworks within its boundary it is not likely that they can be secured in any quantity by the citizens of that state.

Progress has been made in the prevention of Fourth of July accidents, but there is still a long way to go.

"Fireproof" Buildings Not Fireproof

An important truth is constantly being emphasized by the experience at fires occurring in so-called "fireproof" buildings, which are not what their name implies. In other words that, while they will not burn *down*, they will burn *out*.

This fact has been demonstrated in several more or less recent occurrences, in some instances in fires arising from outside exposure, as in the notable case of the Burlington Building in Chicago, a few years ago and in later ones; and again from the contents, inflammable in their nature, becoming ignited and the fire spreading through ventilating shafts and other openings to other floors, where more burnable material is stored.

No matter how fire resistant the structure itself may be, it is only as *fireproof* as its contents. If the contents are inflammable, there is just as likely to be a hot and severe fire in the "fire proof" building as in that of less resistant construction. And sometimes such a fire is even harder to control, owing to the fact that the building is higher and less accessible to the fire department in the upper floors, than a non-fire proof structure would be.

The term "fireproof," as applied to buildings, is very deceiving, and its use should be discouraged, as it naturally gives to those not well informed in the matter, a false sense of security which is dangerous in the extreme.

A much more sensible and certainly truer term is that of "fire resistant," which tells the story of the modern building, and emphasizes its advantages, without exaggeration.

CORRESPONDENCE

Defends the Assistant Chief

To the Editor:

The articles in your paper afford very interesting and instructive reading for myself and a large group of firemen throughthe country and I rarely can take issue with any of your statements, but in the last issue under the heading "Unable to Check Fire Beneath Pier" you state:—"The assistant chief's decision on the method to proceed in handling this fire was probably responsible for its extent."

Now, this might be an accurate statement, but as I read it the conditions were as follows:—Fire started about 2:00 p. m. on a Saturday afternoon caused by a vacationist repairing his boat beneath the pier, and which as a result of igniting, set fire to pier, companies and assistant chief due on first alarm apparently arriving promptly.

Due to the fact that no fire boat was available, and no attempt was made by use of small boat, float, or roof ladder suspended from edge of pier to get line at work beneath pier to hold fire in check pending the laborious operation of cutting through flooring for cellar pipe, and no attempt apparently was made to remove any of the highly inflammable goods and stock generally found stored on piers of such description, the fire naturally "got away" as the saying is.

Of course the executive officer in command under such conditions is held morally responsible for the extent and handling of such a fire as this one, and no doubt, the assistant chief did err somewhat in the early stages of this fire, BUT! if the account as told is correct, what about the "skipper" himself, does he not enter into the final accounting somewhat?

Now! "The assistant chief arrived shortly after the first engine company *and had been there but a few minutes when the chief rolled in.* At the time the chief arrived members of the truck company were still cutting the flooring to make an opening for the line of hose which had been laid. The chief went to one side of the pier, dropped a ladder and climbed part way down to reconnoitre. He thereupon ordered additional holes to be cut in the pier in an endeavor to get lines in such a position that they would be able to quickly bring the fire under control. After getting two other holes cut in the flooring in the pier shed and two other lines of hose operating at a very disadvantageous angle, the chief discovered the fire was spreading to dangerous proportions and immediately transmitted a second alarm. Possibly fifteen minutes after arrival of second alarm apparatus, the entire end of pier shed was ablaze and fire coming out from beneath the pier platform on both sides the chief thereupon transmitted a third alarm." If this is true, is the assistant wholly to blame or does not the chief enter into the picture somewhat, if deep thought is given the entire story?

Sincerely yours,

E. S.

Some of the New Stations Erected in Mobile, Ala.

Four stations, three of which are illustrated, were erected recently in Mobile, Ala. At the top is the bungalow station of Hose 8 in charge of Captain Lorenzo F. Miller. It houses a 750-gallon American-LaFrance pumper, and protects the northern end of the city where the docks are located. Center—Down town central fire station named the "Matt Sloan" in honor of the city's first paid fire chief. It houses three pumpers, an aerial turret wagon, and two 1,000-gallon steamers that are held in reserve. This station which is in the business section, houses twenty-one men and is in charge of First Assistant Chief J. K. Fox. Lower—Bungalow station of Pump and Hose Company 7, in charge of Captain Lymon O. King; the station houses a 750-gallon American-LaFrance pumper. The company protects the shipyard section in the southern section of the city.

H. D. PILLICHODY.

Attack Iowa Firemen's Raise.—According to the state law of Iowa, it is contended that the cities in the state have no right to pass local ordinances increasing or fixing the salaries of municipal employees. This argument was presented in connection with the campaign to increase the salaries of the firemen in Sioux City, Ia. It was also stated that the city reached the limit of its taxing ability.

QUESTIONS AND ANSWERS

Conducted by FRED SHEPPERD, B. Sc., M. E.

"He that questioneth much shall learn much"—BACON

NOTE—Readers of FIRE ENGINEERING are invited to send in questions, which will be answered in the order received. Names are omitted from questions unless otherwise specified.

Twenty-Year Pension Bill

To the Editor:

Kindly publish in an early issue the names of four of our largest cities under the twenty-year pension bill in the fire department. Also if financed by the city or percentage basis of the yearly salary of members of the department.

Thanking you in advance, I remain

S. W., Detroit, Mich.

Answer: The following data taken from present available figures may be of some service to you.

City	How Are Funds Derived?	How Much Does City Contribute?	How Much Do Men Contribute?	Length of Service Required
Los Angeles, Calif.	Citizens' General Fund.	All.	Nothing.	20 years.
Atlanta, Ga.	Appropriation by City.	All.	None.	35 years.
Denver, Colo.	From city, men and insurance tax.	$15,000.	1% of salary.	20 years, 50 years of age.
Chicago, Ill.	State and city taxes.	City taxes.	2½% of wages.	20 years, 50 year age limit.
Louisville, Ky.	Men's salary.		$6 per year.	20 years.
New Orleans, La.	Various ways.	1% of city license.	1% of salaries.	25 years.
Boston, Mass.	.....	Balance.	4% of salary.	Varies.
Detroit, Mich.	Taxation.	All.	None.	25 years.
Minneapolis, Minn.	From city, men and insurance tax.	1-10 mill.	$18 per year.	20 years, 50 years of age.
St. Louis, Mo.	3% of all license taxes, rewards, donation, etc.	$100,000.	$2 per month.	20 years.
New York, N. Y.	Fees, fines, permits and other income.	All.	Nothing.	20 years.
Toledo, Ohio.	From taxation.	.003 from general taxes.	Nothing.	25 years.
Pittsburgh, Pa.	Foreign insurance fines, etc.	$30 per year per man.	$30 per year per man.	20 years.

Some Cleveland Questions with Answers

To the Editor:

Being a subscriber to your wonderful magazine, I am taking the liberty of asking a few questions on the following subjects:

1. What is spontaneous combustion?
2. Name five substances that are subject to spontaneous combustion.

NOTE: *Questions 3 A, B, C, D, 4 and 5, with the answers, will be given in the next issue of* FIRE ENGINEERING.—EDITOR.

Hoping to receive an early reply, I am

Respectfully,

T. J.—Cleveland, O.

March 30, 1926.

Answer: "Spontaneous combustion" is a misnomer. Ignition, rather than combustion, is the phenomenon which is "spontaneous." The proper expression therefore is not "spontaneous combustion," but rather "spontaneous ignition."

Spontaneous ignition may be defined as "ignition by internal development of heat." All combustion is a process of rapid oxidation, that is, the energetic confining of oxygen with the substance burned. Combustion always involves oxidation, but oxidation may take place without combustion. Oxygen is usually supplied from air, which is about one-fifth oxygen, but may also come from certain chemicals. The rusting of iron and rotting of wood are familiar examples of slow oxidation. In slow oxidation, just as in combustion, heat is evolved. The amount of heat developed in the same for a given quantity of material, no matter whether the oxidation be slow or take the form of combustion; from wood for example, the same amount of heat is developed whether the process be decay or fire. But in slow oxidation under ordinary conditions, heat is produced so slowly that it escapes before there is any appreciable rise in temperature. Under other conditions in material subject to oxidation so subdivided as to present a maximum surface, and at the same time so protected as to prevent the escape of heat, the temperature rises and oxidation, like all chemical action, proceeds faster, in turn further rising the temperature until the point of ignition is eventually reached. This is spontaneous ignition.

Spontaneous ignition may in general be said to be possible in all classes of substances that will burn, but only possible because of some special favorable condition or quality. Eliminating certain chemicals and explosives, which need not be considered here, three conditions are always necessary. One is that air must be present. The second is that the material be finely divided so as to present a relatively large surface subject to oxidation. The third is that the material be so placed that heat cannot readily escape. A large pile of finely divided material, such as coal, supplies all three of these conditions. The interstices are so small that they do not permit the ingress of sufficient air to support oxidation. Moisture is also a factor in spontaneous ignition, being a necessary condition in most cases.

Bacteria or micro organisms are sometimes responsible for fire, the heat being accompanied by fermentation or putrefaction. Although the temperature produced by such action are not high, yet if the heat cannot escape a gradual rise in temperature results, which in turn accelerates the action and may cause the ignition point to be reached.

2. Five substances in which spontaneous ignition frequently occurs are as follows: Soft coal, powdered aluminum, charcoal, oily rags or waste (partitcularly where the oil is linseed oil), oilcloth, (floor and table), in pile. Oilcloth waste, particularly where it is made up of cork and linseed oil, is a rapid producer of spontaneous ignition.

Solution of Water Tower Problem

To the Editor:

Kindly give the enclosed water tower problem your early attention as I am rather anxious to obtain your opinion as to its correctness. Problem referred to appeared in the April 10th issue.

Sincerely yours,

A. L. S., April 28, 1926.

Lynn, Mass.

Problem referred to by correspondent is: Four engines are working into a water tower, one through 250 feet of 2½ inch hose, one through 300 feet of 2½ inch hose, one through 350 feet of 2½ inch hose, and one through 400 feet of 2½ inch hose. The tower is fully extended, and a 2 inch tip is used. A nozzle pressure of 90 pounds is required. What is each engine pressure?

A. L. S.'s Answer: 65 feet water town—2 inch nozzle.

Back pressure equals .434 times 65 or 28.21 pounds.

Friction loss in tower, valves, etc., 25 pounds.

Nozzle pressure, 90 pounds.

Pressure required at base of tower, 143.21 pounds.

Gallons per minute, 90 pounds at nozzle.

Omitting constant 990 to 997—$29.7 \times d^2 \times \sqrt{P}$ equals gallons or 2×2 or 4×29.7 equals 118.8

$\sqrt{}$ (90) equals 9.4. 9.4×118.8 equals 1115.12 gal. per min.

1115.12 divided by 4 (number of lines) equals gallons required by each line per minute or 278.78 gallons.

$2 \times Q^2 \times Q$ divided by 100 equals friction loss per 100 feet.

278.78 divided by 100 equals 2.78 by 2.78 equals 7.7284×2

15.4568 divided by 2 equals friction loss in each 50 feet length or 7.75.

Friction loss in each line of hose is then as follows:
No. 1. 250 ft.—5 lengths equals 38.75 or 39 pounds.
No. 2. 300 ft.—6 lengths equals 46.5 or 47 pounds.
No. 3. 350 ft.—7 lengths equals 54.25 or 55 pounds.
No. 4. 400 ft.—8 lengths equals 62. or 62 pounds.
Engine pressures then solve to be:
No. 1. —143 lbs. at base of tower plus 39 lbs. friction loss or 182 lbs.
No. 2. —143 lbs. at base of tower plus 47 lbs. friction loss or 190 lbs.
No. 3. —143 lbs. at base of tower plus 55 lbs. friction loss or 198 lbs.
No. 4. —143 lbs. at base of tower plus 62 lbs. friction loss or 205 lbs.

Note: The Editor has checked your solution and finds that it is substantially correct.

There is one point which might be challenged and that is the assumption that each engine is delivering the same amount of water through its head line.

However, as the problem does not specify how much water each engine is delivering nor the pressure at each engine, you are safe in making the assumption that each branch line will be carrying the same quantity.

Water Tower Problems

To the Editor:

The Boston, Mass., department maintains three water towers with 3½ inch hose through the riser. We are told to allow a friction loss of 15 pounds, caused by siamesed connections and water passing through the riser and also discharge at nozzle.

When 2 lines are siamesed into a standpipe of a building we allow 25 pounds friction loss.

As I have received considerable information from you in the past and for which I am indeed grateful, I am going to take the liberty of calling on you for a definite figure (in pounds) to allow for "Tower Friction." Is it 15 or 25 pounds or is it to be considered by the number of lines, sizes of hose that are connected to the water tower?

Enclosed is an example which I have originated in my spare time and figured out as to your book on "Simplified Hydraulics." The point most obvious to me is that the discharge from a 2 inch nozzle on the water tower as being 1,271 gallons, it averages each line of the three, ⅓ of 1,271 gallons equal to 424 gallons approximately. As you will see this gives a friction loss of 40.195 pounds representing 2½ inch hose and being 3 inch hose we divide that by 2.6 which reduces it to 15.46 pounds per hundred feet of 3 inch hose.

In the second method which I employed, I took the friction for the total discharge of 1,271 gallons ($2 \times Q^2 + Q$) which equals 335.798 pounds, representing 2½ inch hose, and divide this product by the factor for 3-3 inch lines which is 20.4 and gives a friction loss of 16.46 pounds per 100 feet of 3 inch hose.

I am puzzled as to which method is correct, there being a difference of one pound in the second method, but in figuring out the distance in hundred foot lengths it gives a different engine pressure according to the number of 100 foot lengths in the line of hose from the tower back to the engine to secure the exact engine pressure required.

Kindly inform me as to the correct and best method to use in solving a problem of this calibre.

Thanking your for you valued assistance, I remain,

Sincerely yours,
A. K. W.—April 16, 1926,
Boston, Mass.

Question: Three engines, Nos. 7, 10 and 50 are 1,000 gallon pumpers, run a line of 3 inch hose to a water tower and extended 65 feet. 2 inch nozzle with 115 pound nozzle press—riser of tower is 5 inches Engine No. 7 runs 600 feet of 3 inch hose, No. 10—400 feet and No. 50—250 feet of hose.

Fire Boat (Engine No. 44, 6,000 gal. pumper) runs 750 feet of 3½ inch hose from boat, along wharf to the turret pipe on rear of tower with 1⅝ inch nozzle with 95 pounds nozzle pressure.

A—Find pressure required at each engine?

B—Find total discharge of water from the 2 nozzles per minute?

Answer: Fire boat engine No. 44.

K for 1⅝ inch nozzle on 3½ inch hose is .113 x 15 (L—which number of 50 foot lengths in line) equals 1.695. 1.695 x 1.1 (balance factor) equals 2.795 x 95 (nozzle pressure) or 265.525 pounds or 266 pounds approximately.

Discharge = 1.625^2 equals 2,640625. 2.640625 x 29.7 (barometric pressure) equals 78.408 x 9.746 (square root of nozzle pressure) equals 764.164368 or 764 gallons discharge from 1⅝ inch turret pipe.

Back pressure equals .434 x 65 or 28.21 pounds. 28.21 plus 115 (nozzle pressure) plus 25. (tower friction loss) or 168.21 pounds at base of tower.

Friction loss for 1,271 gallons equals—12.71^2 (12.71 for 100 feet) x 2 + 12.71 equals 335.798, which is the loss for 2½-inch hose. 335.798 divided by 20.4 equals 16.46 or loss per 100 feet of 3-inch hose.

Discharge of nozzle (2-inch) equals: 2^2 x 29.7 (barometric pressure) x 10.7 (square root of nozzle pressure—115) equals 1,271 gallons discharge from tower riser.

Engine pressures are as follows:

Engine No. 7.

Friction loss per 100 ft.	16.46
Number of 100 ft. lengths	× 6
Total friction in line	98.76
Pressure at base of tower	+ 168.21
Required engine pressure	266.97 or 267 lbs.

Engine No. 10.

Friction loss per 100 ft.	16.46
Number of 100 ft. lengths	× 4
Total friction in line	65.84
Pressure at base of tower	+ 168.21
Required engine pressure	234.05 lbs.

Engine No. 50.

Friction loss per 100 ft.	16.46
Number of 100 ft. lengths	× 2.5
Total friction in line	38.65
Pressure at base of tower	+ 168.21
Required engine pressure	206.86 lbs.

Fire boat (engine No. 44) equals 266 pounds.

Total discharge from tower is: 2" nozzle discharge equals 1271, 1⅝" turret pipe discharge equals 764 gallons. 1271 plus 764 equals 2,035 gallons or total discharge.

Second Method for Finding Friction Loss.

Figuring friction loss on three 3" lines into tower by taking average (⅓ of total discharge to represent each line.)

One third of 1,271 gallons equals 424 gallons approximately.

Friction loss equals 4.24^2 x 2 plus 4.24 or 40.195 (for 2½" hose). 40.195 divided by 2.6 (conversion factor) equals 15.46 pounds for each 100 feet of hose.

Engine pressures then solve out to be:

Engine No. 7.

Friction loss per 100 ft.—3" hose	15.46 lbs.
600 ft. of hose—6 lengths	× 6
Total friction loss from tower to engine	92.76 lbs.
Pressure at base of tower (required)	+ 168.21
Total pressure required	260.97 or 261 lbs.

Engine No. 10.

Friction loss per 100 ft.—3" hose	15.46 lbs.
400 ft. of hose—4 lengths	× 4
Total friction loss from tower to engine	61.84 lbs.
Pressure required at base of tower	+ 168.21
Total pressure required	230.05 lbs.

Engine No. 50.

Friction loss per 100 ft.—3" hose	15.46 lbs.
250 ft. of hose—2—100; 1—50 ft. length	× 2.5
Total friction loss from tower to engine	38.65
Pressure required at base of tower	+ 168.21
Total pressure required	206.86 or 207 lbs.

Friction in Risers

The figures you employ for friction loss in standpipe and in water tower riser are satisfactory. Your second solution is the more acceptible, for each line is calculated separately.

New Officers, Arizona State Firemen

The third annual convention of the Arizona State Firemen's Association was held at Prescott, on June 10 to 12, with a large attendance of firemen from all over the state. It was decided to hold the 1927 next convention in the city of Pheonix.

The officers elected to serve during the next association year were as follows: W. J. Nemeck, Douglas, president; H. W. Reggin Prescott, first vice-president; O. W. Gildow, Kingman, second vice-president; and R. H. King, Tucson, secretary-treasurer. The new executive committee will consist of Jacob C. Erhart, Pheonix, and John M. Letson, Lowell, and the sergeant at arms is G. A. Cox, Glendale.

Air View of Burning Ammunition Depot at Dover
A photograph taken from an airplane showing the large area affected by the explosion, and some of the many fires.

Lightning Blamed for Big Jersey Arsenal Explosions

Thousands Made Homeless by Wrecked Homes—Wind Changed Course of Flames and Saved Many Explosives

LIGHTNING which is believed to have struck a powder magazine in the United States Naval Munition Depot at Lake Denmark, near Dover, N. J., caused four explosions of gigantic proportions. The force of the blasts were felt in an area about thirty miles distant from the depot—automobiles were hurled off the highways—doors were torn from their hinges—portions of the exploded shells were imbedded in walls and masonry. Fire broke out intermittingly in various districts and revealed the intensity of the havoc.

One out of every ten windows in Dover was broken by the explosion. Many of the residents took in the homeless—the Moose Hall and the Elks Club as well as many of the public buildings were converted into temporary hospitals; churches were opened to care for those made homeless.

Ten are known to have died from the explosion, twenty marines, one soldier and about ten of the civilians are reported missing. There is a possibility that private property damage will reach more than $100,000,000. Arrangements were made for a thorough naval investigation and for consultation with the legal department to ascertain the extent to which the Navy Department is responsible to the civilian population.

Bombardment of Over Twenty-four Hours

For more than twenty-four hours, 16-inch armor-piercing shells, 14-inch and smaller calibre shells were exploding, throwing their projectiles in all directions. As the fire advanced, the heat caused additional stores to explode. Vast flames from the fires illuminated the four mile area of building ruins. A lull in the wind and a change in its direction, is one of the reasons why all of the stores of ammunition and powder did not fall prey to the advancing flames. Had more of the shells exploded, there is no estimating how great the resulting damage would have been.

All of the medical aid in the locality worked incessantly in caring for the injured and aided in reuniting families that were separated as they fled panic-stricken from the section of the bursting shells. Some of the nurses worked constantly for forty-eight hours.

Before the fire had a chance to cool, and while many of the shells were still bursting, Secretary of War Dwight F. Davis, accompanied by a staff of generals, made a survey of the place. After having penetrated the danger zone, Secretary of War Davis said that he was convinced that the government must adopt a new policy of arsenal planning. Buildings must be more widely separated so that powder and ammunition magazines would be less likely to explode by contact when one explodes. Secretary Davis said he believed that the damage on the army reservation would be between $1,500,000 and $2,000,000 but this statement was later corrected to $5,000,000.

Ambulances were rushed to the scene from the Naval Hospital at the Brooklyn Navy Yard.

Government Expects Opposition to Reconstruction

The government expects that there will be considerable opposition to the reconstruction of the buildings there. Only sixteen of the magazines were underground, and only a few of the buildings were erected prior to the World War. The buildings at this depot were fifty feet in width, and were fourteen feet from the ground to the underside of the roof framing—the lengths of the buildings varied up to 250 feet. The standard construction consisted of terra cotta, hollow tile walls, stuccoed on the outside. The columns and the girders were of steel; ventilators were installed to reduce the heat caused by the sun's rays beating down on the roof of the buildings.

Await Airplane Pictures of Explosion with Interest

While the devastation was going on, newspaper camera men in airplanes took pictures of the various buildings on fire, and of the area in general. The naval court of inquiry are awaiting with interest the showing of these pictures, as a great deal

of information will be gained from them. Some of the officials advance the theory that the fire was not caused by the lightning striking the ammunition stores as the buildings were equipped with lightning rods properly grounded. The pictures, it is believed, will answer this statement.

In addition to the ammunition storage depot that exploded at Lake Drummond, other depots are located at New London,

Scenes of Desolation at the Dover Explosion

Upper—Row of unexploded shells in front of the wrecked government buildings, and in constant danger of exploding due to the heat of the advancing flames. Lower—Night photo of the fire at the U. S. Naval Ammunition Depot at Lake Denmark.

Conn.; Fort Lafayette, N. Y.; Charleston, S. C.; Olongapo, P. I.; Cavite, P. I., and New Orleans, La.

Thirteen Die in Catskill Hotel Fire

Following the act of the New York city legislature in squashing a move to create a fund for a survey of the summer hotels in the Catskill Mountains section of New York, was the receipt

The Twilight Inn, Haines Falls, N. Y.

Note the flammable construction of the old summer resort and the wooden passages leading from one part of the building to another

of news of the outbreak of a fire in the Twilight Inn at Haines Falls which destroyed the hotel and in which fourteen people are known to have perished.

It is doubtful what to attribute as the cause of the fire. A theory is advanced that at a dance being held in the servants' quarters, some one of the dancers may have discarded a lighted cigarette, and that this may have developed into the tragic event.

The building was more than thirty-five years old and was constructed of highly flammable material. The shingles were dry and weatherbeaten—even the few fire escapes from one section of the building to another or to safety, were constructed of wood.

The watchman, who aroused many of the guests on discovering the fire, died when he re-entered the building to guide some to safety. The flames spread rapidly. One woman, who was fleeing to the grounds with her daughter close behind, just managed to exit in time—her daughter was caught in the onrush of the flames. There is no suspicion of incendiarism, although this is the third fire at the inn since 1914; there was a fire at the inn during the summer of 1925 which caused a damage of $2,000 and which destroyed a large part of the roof.

It is believed that many of the guests perished when the floor collapsed and precipitated them into the flame-filled basement. The fire was fought by firemen from Tannersville and Haines Falls. The water supply gave out in about an hour, but water was pumped up to the inn from a stream below.

WHAT'S BURNING

From reports covering the United States and Canada, the estimated losses by fire during the week ending July 9, 1926, aggregated $7,316,400 as compared with $5,988,400 for the corresponding week in 1925. The total is derived by adding to the amount in the list given, which includes only those of $25,000 loss and over a sum equal to thirty per cent of that amount, statistics showing that the smaller fires

The Ruins of the Twilight Inn

The gaunt appearing chimneys are all that is left of the hostelry that was once the show-piece of that center of the Catskill Mountains.

average about that proportion of the larger. Losses for the week ending July 16 following their right order.

The figures published in this list, compiled from telegraphic reports of fires occurring during the weeks, are based on estimates made at the time, which are necessarily hurried and are subject to later investigation and consequent correction. Taken as a whole, however, they give an approximately correct view of the losses incurred. The figures represent loss in thousands.

NEWFANE, N. Y.—Auto sales and stock rooms of F. W. Howell garage 28
SALEM, W. VA.—Garage of H. H. Shahan & F. A. Marcy 35
PROVIDENCE, R. I.—Fur store of Wm. H. Harris, damaged .. 195
MINNEAPOLIS, MINN.—Main bldg., warehouse and contents of Minneapolis Roofing & Cornice Co 50
DULUTH, MINN.—Glass Block department store of F. A. Patrick Co. 198
ST. JOHNS, QUE.—Vandeweghe, Ltd., factory 225
DETROIT, MICH.—F. M. Sibley lumber yard damaged 495
GROTON, VT.—Plant of Groton Mfg. Co. and adjoining houses damaged 43
FAR ROCKAWAY, N. Y.—Hotel Lorraine, damaged 70
GREENFIELD, PA.—General store, blacksmith shop, garage and several houses 58
WORCESTER, MASS.—J. W. Bishop Co. building 245
LOUISVILLE, KY.—Third and fourth stories of Atlantic Bldg., damaged 45
LONG BRANCH, N. J.—Hotel Hollywood damaged 375

YORK, PA.—Four-story warehouse of H. H. Lau & Co..... 345
SALEM, IND.—Washington County Asylum..... 35
SAN FRANCISCO, CAL.—Plant of California Fibre Form Co.. 45
TUSCALOOSA, ALA.—Rosenfield Building damaged..... 28
BRAZIL, IND.—Engine house, tipple and clay-crushing plant of Climax Coal & Clay Co..... 145
COLUMBUS, OHIO—10,000 gallons alcohol in denaturing plant of Federal Products Co..... 73
WEST CHESTER, PA.—Specified Macaroni Co..... 50
WEST POINT, VA.—Terminal Apartment House..... 48
SUFFOLK, VA.—Hull mill of Southern Oil & Feed Mills plant.. 55
SOUTH BOSTON, VA.—Clover lumber plant..... 45
WEST PORTLAND, TENN.—Tobacco prizing house..... 25
SWIFT CURRENT, SASK.—W. W. Cooper Department store damaged..... 285
HAZELTON, PA.—Shoe store of H. Smith and building..... 28
WINNWOOD BEACH, MO.—Home of Henry W. Spencer..... 28
BRAGG CITY, MO.—Five one-story buildings in business section 25
MIZE, MISS.—Store buildings of Cooley Bros., Citizens' Drug Store and adjoining stores damaged..... 65
FT. DODGE, IA.—Iowa Auto Supply Co. damaged..... 98
NEW HAVEN, IND.—Stiefel & Levy grain elevator damaged... 38
AVONDALE, N. S.—Barn of R. B. & Thomas Mounce..... 95
KALAMAZOO, MICH.—First Presbyterian Church..... 148
ST. LOUIS, MO.—American Fashion Shop and Store occupied by M. Schram..... 55
FRANKLIN, IND.—Farmers elevator..... 33
CHESTER, PA.—Sun Oil Co. crude oil still..... 40
GREENFIELD, PA.—Five homes, several stores and buildings.. 55
GOSHEN, IND.—Hawks-Gortner building damaged..... 60
BALTIMORE, MD.—Pillow factory of R. C. Heller & Co., damaged..... 90
LOUISVILLE, KY.—Third and fourth stores of Atlantic Building..... 50
CINCINNATI, OHIO—Trojan Brass Mfg. Co., and Rath & Llewellyn Co. Bldg..... 63
SAN FRANCISCO, CAL.—F. W. Wentworth Desk Co. warehouse 120
GARY, IND.—Variety store..... 190
WINTHROP, MASS.—Cottage Park Yacht Club building..... 45
BINGHAMTON, N. Y.—Plant of G. I. Treyz Chemical Co. at Horton..... 95
TROY, N. Y.—Harmand O'Brien laundry..... 58
EAST ST. LOUIS, MO.—Machine shop and part of warehouse of Southern Malleable Iron Co..... 495
ABILENE, TEX.—Warehouse of Hall Walker..... 60
HAWTHORNE, CAL.—Business section..... 98
OCALA, FLA.—Municipal Electric Ice and Power plant..... 100
ELMIRA, N. Y.—Elmira Wholesale Grocery Co. warehouse..... 55

From reports covering the United States and Canada, the estimated losses by fire in the week ended July 16, 1926, aggregated $3,634,800, as compared with $7,297,800 for the corresponding week in 1925.

EAST ROCHESTER, N. Y.—Eyeres Block..... 100
PHILADELPHIA, PA.—Philadelphia Country Club..... 38
KEARNY, N. J.—General storehouse, two one-story shops, etc., of Penn. R. R..... 148
BROOKFIELD, N. J.—Rugs in Essex County Carpet Cleaning Co. 95
SALINE CITY, IND.—Practically all surface buildings at plant of Climas Coal & Clay Co..... 145
DALE, IND.—Four stores and offices..... 58
KEO, ARK.—Seven frame buildings, including First Baptist Church..... 28
TEXARKANA, ARK.—Plant of Southern Acid & Sulphur Co. damaged..... 40
NEWARK, N. J.—Newark Velodrome damaged..... 100
FORMOSA, ONT.—Notre Dame Convent and brick residence of J. W. Waechter..... 90
RICHMOND, VA.—Wholesale paint, oil and varnish store of Harwood Bros..... 95
SPARTANBURG, S. C.—Local steam-electric generating station of 3,000 kilowatts capacity of So. Car. Gas & Elec. Co..... 145
BISHOPVILLE, S. C.—Business district damaged..... 38
ELKTON, MD.—Concrete block building on West High Street.. 78
CHESTER, PA.—Lumber yards of William Ward damaged.... 25
DANVILLE, VA.—Clover Lumber Co. plant in Halifax county 45
GARFIELD, N. J.—Johnson Products Co., Inc..... 65
THORNTON, R. I.—Four buildings..... 70
SAN FRANCISCO, CAL.—Plant of Faget Engineering Co..... 40
BALTIMORE, MD.—Plant of Jones Hollaware Co..... 45
N. TONAWANDA, N. Y.—Buildings and yard of Enterprise Lumber Co..... 45
UNADILLA, N. Y.—Ontio Hotel..... 40
NEW HAVEN, CONN.—Five story structure at State and Whiting Sts..... 98
HAMPTON BAYS, L. I.—Shinnecock Casino..... 48
DETROIT, MICH.—Mark R. Hanna Asphalt Co. plant..... 195
WATSONVILLE, CAL.—Packing houses of P. P. Stolich, Kovacich & Chlorovich and M. M. Borina..... 73
SANTA ROSA, CAL.—Main building and annex at Clement's resort..... 33
LATONIA, OHIO—Crude oil in plant of Petroleum Refining Co. 45
MORGAN PARK, Minn.—Coal screen plant of Minnesota Steel Co..... 48
GRAND RAPIDS, MICH.—Garage of Loomis & Mausey..... 40
EL PASO, TEX.—Overall factory of Hicks-Hayward Co..... 90
NEW YORK, N. Y.—Building occupied by Phillip Strobel & Co. 40
HAINES FALLS, N. Y.—Twilight Inn..... 195
MCGEHEE, ARK.—McGehee cotton gin and three rooming houses..... 28
BRATTLEBORO, VT.—Plant of the Conn. River Power Co.... 25
SHREWSBURY, MASS.—Bigelow Grammar School..... 55
NEWARK, N. J.—Interior of Royal Electrical Laboratories.... 25
TURNER, KAN.—Santa Fe Elevator B..... 140
PORTLAND, ORE.—No. Pacific Lumber Co. mill..... 45

Palisades Park Purchases Fire Apparatus.—Palisades Park, N. J., has closed contract with the Maxim Motor Co. for a hook and ladder truck.

Southern N. Y. Volunteers Hold Convention

Islip, Long Island, was host to the thirty-first annual convention of the Southern New York Volunteer Firemen's Association. About four hundred delegates from various fire departments in Nassau, Kings, New York, Richmond, Suffolk, Westchester, Bronx and Rockland counties were present.

The invocation was given by Rev. Peter R. Joshua of the Presbyterian Church, and prominent village officials welcomed the association to the town. In the afternoon of the first day, Rev. Joseph R. Alten, president of the association, and candidate for the office of vice-president of the New York State Firemen's Association, presented his report for the year. Rev. Alten praised the work done for the association by A. V. Sammis of Huntington, and by P. J. McCarthy, chairman of the law committee. The law committee was very active in fighting all legislation that would be detrimental to the interests of the volunteer firemen.

The following officers were elected to take office on October 1st: President, Frank A. Howland of Islip; first vice-president, George M. Solan of Woodhaven; second vice-president, John P. Kelly of Brooklyn; secretary, August Kalb of Rockville Centre; treasurer, Philip Peters of Patchogue.

The place of holding next year's session was referred to the board of officers with power, after which the convention adjourned.

A tournament and parade was held on Thursday, June 24. Companies from the following towns competed in the various events: Amityville, Port Washington, Patchogue, Lynbrook, Sea Cliff, Bay Shore, Mastic, Islip, Little Neck, Rosedale, West Sayville, Inwood, Bellmore, Merrick, Hempstead, Long Beach, Farmingdale, Sayville, Great Neck, Woodmore, Oceanside, Malverne, East Islip, Glenwood, Quoque, Roosevelt, Baldwin, Lindenhurst, Huntington, Freeport, Lindenhurst, Huntington Manor, Cold Spring Harbor, Central Park, Westbury, Bohemia, Elmont, Greenport, Syosset, Glen Cove, Port Jefferson, and Center Islip.

Many prizes were provided for the various competitions, and the committee in charge of the preparations provided many entertainment features for the delegates.

Fatal Gasoline Explosion in Berlin

Nine persons were killed and a score were seriously injured in the German Capital when a gasoline tank exploded, wrecking this five-story building.

New Fire Station for Providence, R. I.—A contract was awarded for the construction of a new fire station in Providence R. I. The station will be erected at a cost of $30,000.

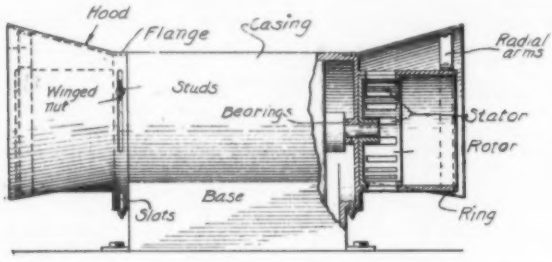
Recent Patents

Descriptions of Patents Recently Issued of Interest to Fire Departments—New Fire Siren—Forest Fire-Fighting Apparatus

Siren

A means of directing the sound of a fire siren in various directions has been patented (No. 1,585,219) by Dudley R. Webb, Jr., of Philadelphia, Pa., and the patent has been assigned to the Federal Electric Company of Chicago. The illustration shown is an assembly side view of the invention partly in axial section showing the siren and sound directing elements.

There is a main housing standing on a base and enclosing the motor. The motor shaft is supported within bearings in the housing, and it is extended at the ends for attachment to the hubs of the siren rotors. Each rotor rotates within a stator which



is concentric with it. The rotor and stator are slotted in the usual manner to produce sound when the rotor revolves.

Each stator is extended horizontally at the end thus forming a hollow cylinder through which the stream of air enters the rotor. Mounted partly upon this cylindrical extension and partly upon the casing is a hood which is intimately concerned with the design. The hood flares outward and at the inner end has a flange which is cylindrical and fits over the cylindrical end of the casing. This flange has annular slots for accommodating studs which radiate at intervals from the housing at the ends thereof. The studs are provided with wing nuts by which the hoods may be secured in any position, and the angle may be adjusted.

Near the outer end of each hood are radial arms fastened at the outer end to the inside of the hood and at the inner end to a ring which fits slidingly upon the extension. As a result of this construction when the wing nuts are backed off the hoods may be adjusted angularly to any desired position.

In the sides of the hoods are openings, that is, a sector is removed through which the sound produced by the siren may issue readily. The cut-away sector may vary in size, but experience teaches that an opening of approximately ninety degrees is appropriate.

In practice, tests are conducted to determine the direction where it is desired to concentrate the major portion of the sound. In the adjustment with the hood downward (the preferred position) the sound will extend outward, and a portion will extend obliquely downward. By properly adjusting the hoods, the direction of the sound may be controlled to a surprising degree. The hoods also serve to protect the siren parts from the effects of the elements.

Forest Fire-Fighting Apparatus

An apparatus has been designed particularly for fighting forest fires along the Pacific coast, and it has been patented (No. 1,585,146) by Earl W. Himberger of Seattle, Wash.; it has been assigned to the Pacific Marine Supply Company of the same city.

To fight fires in that territory it is essential that the apparatus shall be compact and portable and that it shall not catch on the underbrush, and it must be light enough to be carried by one man.

Motor cylinders arranged in opposed pairs are mounted on a light base, at opposite side of the center line of the base. Each pair is suitably coupled by a continuous crank shaft or rigid coupling.

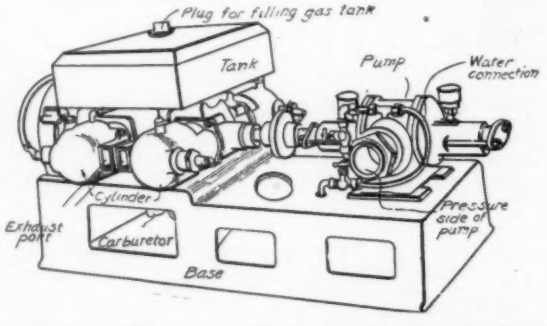
A fly wheel with which may be incorporated the magneto coils, is secured to one end of the crank shaft preferably at the end of the base. Its lower portion is received by a recess in the base to protect it, and its upper end is also protected.

Each cylinder is preferably provided with an individual outwardly-directed exhaust passage to direct the exhaust gases therefrom into the atmosphere. The pump at the opposite end of the base is preferably of the rotary type. It is provided at one side with an intake and at the opposite side with a discharge port arranged for the attachment of hose. A feed water pipe extends to the various cylinders to be passed through the water jackets, and the water after circulating is discharged.

The motor has various projecting parts such as the spark plugs and individual exhaust passages which if left uncovered would tend to catch on the underbrush. To avoid this and to make the device more compact, the fuel supply tank is mounted above the motor. By using a broad shallow tank, it acts as a cover for the entire motor. The center of gravity of the tank is thus brought close to the base.

In order to protect the carburetor, it is positioned within the hollow base. It is supported from the base through an intake manifold which connects to the motor cylinders through the base. Preferably a two-cycle engine is employed, and thus the manifold may lead directly to the crank case of each pair of cylinders. The fuel supply leads directly downward through the carburetor from the tank.

A unit as the one described has been provided which weighs about sixty-five pounds. A woodsman can carry this weight, provided the mass is compact and the center of gravity of the object is close to the man's back. Thus with the device carried by one man strapped to his back, and another carrying the



hose, it is possible to carry this fire apparatus into the densest woods and over rough ground. It is but a moment to connect the hose, and draft water from the nearest stream.

Modern Fire Alarm Signalling

(*Continued from page 720*)

good level and place it on the front surface of the board and obtain a few thin steel shims shimming it out until it is perfectly square. When the front is (suare) square put the level on the side and force the board over until it is square and tighten up on the nuts. Do not tighten up too much as you will crack the slate and perhaps ruin the board.

The main generator leads are now hooked up as shown in the diagram in sketch No. 14 and particular care should be taken to see that the positive lead from the generator is attached to the positive post on the board. If the leads are reversed you will get a reverse reading on your voltmeter and ammeter during the test.

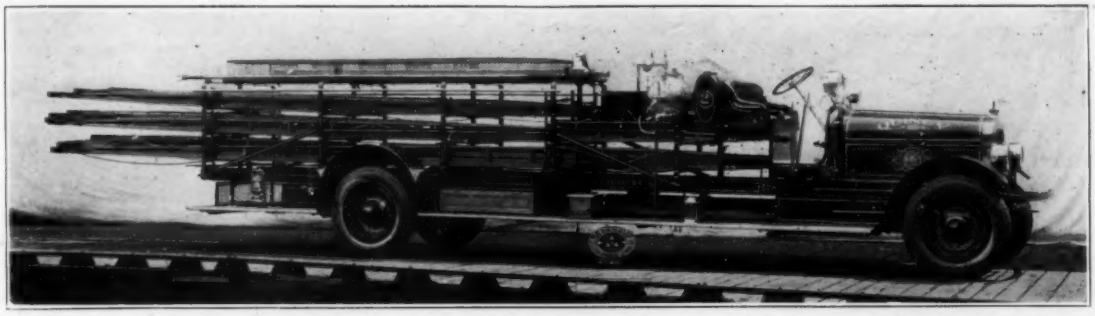
Hook up the battery leads as directed in article covering storage batteries or follow the diagram of the board in this issue.

Next hook up your outgoing lines being sure to have them go on the right posts and do not get them mixed up, i. e., have No. 3 minus line on No. 1 positive post as it will give you a great deal of trouble on your test. After you have connected up the lines it will be a good idea to put tags on the wires giving the number of the line so as that any time the wires are taken off for any reason they can be put back in correct order.

The ground wire should be attached to the proper stud and should be of a number six or eight B. and S. gauge. After all the wires are connected up you can lace them with a waxed twine or string to keep them from falling out of place and holding them in position.

Operation of the Standard Boards

You will remember that we had our batteries filled up with electrolyte and were all ready to charge as soon as we had our



The Seagrave City Service Ladder Truck

Model 5560-D Seagrave Double Bank City Service Truck

There is no experimentation with the selecting of fire-fighting apparatus. Fire engineers demand that which the test of time and service have proven to be the most efficient. That is why so much of the fire-fighting equipment in the country today bears the name Seagrave.

The Seagrave City Service Ladder Truck is of the usual Seagrave high-quality workmanship throughout. This truck is equipped with the dependable Seagrave trussed ladders. The single bank Ladder Truck carries a total footage of ladders amounting to 236 feet and the double bank truck 365 feet.

It is this type truck that is selected by the larger cities where fire-fighting equipment must be the best that it is possible to produce.

For detailed information of this truck kindly write to the nearest Seagrave Branch.

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The SEAGRAVE Corporation

Columbus, Ohio

Fire-fighters both

BECAUSE sparks on roofs have always been one of the chief offenders in large conflagrations, the ever widening use of asbestos roofing must be regarded as a distinct advance in fire-control.

The property owner who protects his buildings with asbestos roofing does more than safeguard his own possessions. He truly co-operates with his fire chief as well.

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switchboard connected up. Before starting your generator up insert the test jack plug in the jack marked charging and see if you get a reading; if not throw over the gang switch and if your fuses are in on the battery rack you should receive a reading. When you receive your readings and they are of about two volts per cell you can start your generator set. First make sure that the main switch is open on the board. You must have generator running and up to speed as described before you can throw the main switch in on the board. Press the starting button and if the relay picks up you will receive a reading on the charging jack; if you have this jack plug in as you should. If the needle in the voltmeter is deflected back instead of forward shut off the charge by pulling out the main switch. Correct the trouble by changing the generator leads and start the generator again; close the switch on the board, press the button and note what the meters show. If the relay will not pick up, move the 7-step switch down one step. This switch should be resting on the top left hand contact. If relay will not pick up, move switch down until it does pick up. When the relay goes up you can see what your charging rate is and you will have to arrange the switch until your charging rate is .75 amps. or if a slower rate is desired arrange the switch until you get required rate.

When charging period is ended the generator is shut down and the main switch opened until the next charging period. The pins must be put in the pin switch and the fuses put in the working line fuse blocks before you will close the working circuit. After this is done you can put the test jack plug in the jack marked working and ascertain the voltage and amperage going out on the line. The proper amperage to put on the line is 100-mill amps and the line resistance switch should be adjusted until that figure is reached. If with all the resistance out on the line switch you cannot get 100-mill amps you will have to add more battery to your circuit until you can reach that figure.

Always keep the jack test plug in the holder provided when not in use and always keep a supply of fuses on hand so as to be in readiness when you want them.

Servicing and Correction of Troubles

Following is a review of trouble which may happen at any time and the method of correction:

Cannot get charging reading when switch is closed.

Remedy—Look for blown fuses. Hold up relay armature by hand and see if it will correct trouble. Look up trouble listed under "Generator will not Generate." Wire is broken in board wiring. Sticky relay. Correct by putting in new fuses, adjust relay or correct generator fault.

Following is a list of the places to look for trouble when board will not charge:

Blown charging fuse.
Main line switch open.
Resistance lamp burnt out.
Too much resistance cut in 7 step switch.
Sticky relay.
Relay wiring is open.
Jack plug wire is open.
Battery transfer switch contact open or broken.
Battery transfer switch arm spring broken.
Dirty contacts on battery contacts.
Relay adjusting spring too tight.
No fuse in battery rack.
Battery jar broken opening battery circuit.
Any trouble under generator won't generate.

If working line opens look for following trouble:

Line fuse open.
Battery fuse blown.
Pin fallen out of pin switch.
Line resistance unit burnt out.
Line resistance unit wire broken.
Line resistance unit switch arm spring broken.
Line resistance unit contacts dirty.
Jack test wiring open.
Dead ground on board or line.

If when you place jack plug in receptacle on working side you receive a stray blow, the cause can be attributed to an open wire in the jack plug and it will have to be found and the trouble corrected.

If when you place jack plug in charging circuit receptacle the charging should stop, the same trouble will be found as described above.

If upon transfering the batteries from A to B side or visa versa you get a stray blow you will find a blown battery fuse a dirty or broken contact or contact arm or an open battery lead. A broken battery jar can also cause this trouble.

If upon throwing more resistance into the working circuit you get a stray blow you will find that the resistance unit has been burnt out or at least a portion of it.

If upon changing the arrangement of the lamps in the charging circuit, you should stop the charging you will find a dirty contact or may find you have cut down the charging rate a great deal opening the relay.

If your line opens, and you cannot find any trouble on the switchboard, look elsewhere for it and you will most likely find it in some other part of the office.

Maintenance of Switchboards

All contacts should be kept clean and bright at all times. These contacts should not however be cleaned with a polish as they are treated with a preparation upon which the action of polish is harmful. A clean rag will serve to clean them very well.

The proper lamps should be used in the lamp resistance unit at all times and should be of the carbon filament type. The wattage should be as near one hundred watts as is possible. Under no circumstances should a tungsten filament lamp be used as the results will be very much different.

You should have on hand a supply of the correct fuses both for the charging and working circuits and should never use fuses of a higher rating than those supplied with the switchboard. Do not save fuses which have been used or burnt out as they may be put in the circuit by mistake and will cause any great amount of trouble.

Obtain a piece of soft wood about the width of the contact arms on the various switches and use it to clean the contact surfaces with when they become dirty. A fine piece of sandpaper or crocus cloth is wrapped around the stick and the contact rubbed until it becomes bright and clean. The contacts can also be cleaned by taking a piece of sandpaper and slipping it under the contact arm and working the arm back and forth over the sandpaper reversing the sandpaper and rubbing the contact posts. Never use emery cloth as it will scratch the contacts and is very harmful.

The relay is adjusted at the factory and should not be changed unless it is absolutely necessary to do. Keep all dust and dirt away from the board and clean it twice a week with a prepared cloth. Do not clean the board with a cloth soaked in oil or polish as the boards will not take the oil and it will stand out on the surface and soil the looks of the whole installation.

Do not allow the strong sun rays to strike the boards, as the finish on the brass and bronze will become dark colored if exposed to the sun a great deal.

In ordering fuses and spare parts for your switchboards it is better to order them from the makers of the switch boards, there name will be found on the name plate on the board.

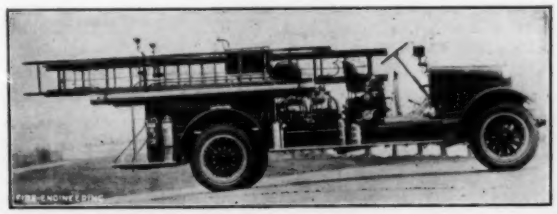
If your board should happen to be burnt out by lightning or a fire and the apparatus on the front is all right, it will be necessary for you to rewire the whole switchboard. Before doing this it would perhaps be best to find out what the manufacturers will allow you on the old board to the purchase of a new one. It may be that you will be able to get out of it just as cheap by turning the old board in for a new one as it will be to rewire and fix it up again.

If you do intend to rewire it again get a blue-print of the board and when you start to rewire it replace a wire at a time as you will be better able to get the wiring right than if you strip the board and try to follow the print alone. However, use the print to check yourself by as it will be hard to correct a mistake when the wiring is all back on again.

The life of a switchboard is determined by the care and service and use it is put to, and too much can not be expected of a board which is left to take care of itself.

The next article will take up Automatic Combination Type Switchboards and will cover Discription, Installation, Operation and Care.

Any questions or ideas you may have about fire alarm systems or these articles, will be answered as promptly as is possible and you have the privilege of using this column for your benefit and help, should you so desire. The author will try to furnish you with any prints or help you in laying out or arranging your system at any time. This service is free and can be used by any purchaser, subscriber or fire department member. Your name will not be used in print if you so request it.



New Pirsch 500-gal. triple combination car for Fluvanna, N. Y. This apparatus was tested by the New York State Rating Organization, Syracuse Division, and passed successfully, being placed in service of the Fluvanna Volunteer Fire Department.

Binghamton, N. Y., in Dispute Over Fire Fund.—Some of the city officials of Binghamton, N. Y., are in a dispute over an appropriation for the purchase of fire equipment. There is a great difference of opinion concerning the purchase of a new pumper or the repair of the present one, the purchase of a ladder or a city service truck, and the establishment of a squad wagon company.

OF INTEREST TO VOLUNTEER FIRE DEPARTMENTS

Organization of Volunteer Fire Departments*

By CHIEF W. F. WISE,
Medina, Ohio.

Medina is a village of nearly 4,000 population with a fire department manned entirely by volunteer firemen. Our apparatus consists of two triple combination trucks. One has 750-gal. pump capacity and carries 35-gal. chemical and 1,000 ft. of fire hose. The other truck has a 400-gal. pump, two 40-gal. chemical tanks and carries 1,000 ft. of hose, and is fully equipped for fighting fires in rural sections. Then we also have a 35-gal. chemical tank mounted on a Ford chassis.

Our ladder wagon is loaded with ladders up to 50 ft., but is seldom used as we carry ladders on all the trucks. This is cited to show you the kind of apparatus that we are operating as volunteers.

Reorganized Into One Company

We, at one time had many officers, which consisted of chiefs, captains, lieutenants, foreman of engine company, ladder company and hose company—and for this reason nearly every one held some office. Ladder men did not think they should touch the hose and vice versa. In our reorganization, such companies and officers have been done away with, and now we are one company handling hose, engines or ladders as is required.

Our organization is composed of 26 men, consisting of chief, first and second and third assistants and chief engineer. All of these men have been drilled and taught to drive and handle any of these trucks. Each man is given an examination as to his knowledge of apparatus by a committee, and, if satisfactory, he is placed on the honor roll and is permitted to drive and handle truck, if none of the regular drivers are present. We have four regular men for each apparatus, but they can take any truck at the time of a fire.

We have 18 men who can drive and handle any of the trucks. This is done by our school, by assigning 3 or 4 men to take out a truck, go to a certain hydrant, connect up and pump. The entire company also goes out to watch them, discuss and criticise, after the men assigned have given a demonstration of their knowledge to handle apparatus. In this way each man is taught to assume responsibility.

Necessity for Harmony in Volunteer Service

Harmony must be made to exist in volunteer fire companies. I have found that jealousy is easily started at times, and when such happens to exist, I immediately investigate and adjust the matter to run in a smooth way again. The chief and assistants should not feel themselves any better than the other members of the department and must work to keep the group interested and happy. We have a number of social gatherings, parties, and so forth during the year. The annual banquet for the members and wives is a big night. The firemen also entertain the mayor, council, and all who are connected with the municipal department of our village at an annual banquet. Stunts and other amusements are planned and carried on during the year, anything to create a greater interest. A large list of applicants is always available who want to join our ranks. Applicants are voted upon by secret ballot and we get the type of men that we want in the department.

Regular Meetings and Drills Should Be Held

Regular monthly meetings should be held and special meetings for drill and practice, and so forth, when required, and any member missing three such meetings without sending in a reasonable excuse should be dropped from the department. At regular meetings, the business of the organization should be transacted, then discussion of some particular point about your apparatus should follow. This is called our school. Each man is given a blank sheet of paper and then upon the blackboard are placed usually about 10 questions. The answers are written on the papers with the name and handed in. It is surprising the amount of good instruction this gives to a volunteer company.

The Fire Alarm

The fire alarm system in small cities and villages where volunteer companies are maintained is usually through the telephone exchange. We have a system that to us has given great satisfaction without a great expense, the telephone company cooperating with the firemen in its operation. A call for the fire department is given the telephone operator, who then throws in switch causing a fire bell to ring in each fireman's home. It also rings a large gong on the engine house as well as trips a relay that starts a steam siren located upon one of our factories. In our case, if firemen wishes to know the location of the fire, he simply takes down telephone receiver which flashes red upon signal board at exchange, the operator immediately communicates with such line and location of the fire is quickly given with such system. We have been able to give efficient service as a volunteer organization.

On a run last week we were timed and from the time of alarm until both trucks made a run of over 8 blocks connected with hydrants and pumpings required a few seconds over 6 minutes.

It so happened that the assistant chief and myself were out of town when the fire broke out, but the second assistant chief took charge and every man in the company did as requested. The result was that after a 2-hour fight with tons of burning beeswax, the fire was stamped out.

I bring this out merely to show what can be done when you have organization. Also study your local situations before the fire.

Many Runs Outside of Village

We make many runs outside of our village to fight country fires and for this purpose we bought a triple combination truck equipped as we found from experience what was necessary to have to fight such country fires. This apparatus was bought by public subscription and is under the control of the firemen.

When a country call is received, no one need be consulted about taking out this apparatus. The first four or five firemen at the engine house respond to the call, a few others go in private machines. This apparatus was put in service last September and up to date has responded to 24 country calls, for which we have received $1,095. For such service, our minimum charge has been $25, and the maximum charge $150. The total expense for men's time, gas and so forth was $372. So far, we are operating at a nice profit and giving satisfactory service, which is greatly appreciated by the people in the rural sections. In my opinion more such apparatus should be in service for such calls throughout the state.

Suggestions for Successful Volunteer Organization

The volunteer firemen's organization, to be successful, must take the following into consideration and abide strictly by them:

1. By-laws of your organization.
2. The right kind of men for your organization.
3. Harmony among your company.
4. Attendance at meetings.
5. Abide by rules.
6. A satisfactory alarm system (within your means).
7. Dependable apparatus.
8. Men all drilled and taught to use same.
9. Men to make private inspections of hazardous places and report. Have each man feel a responsibility rests on him.
10. Take men on inspection tours through your business places and factories.
11. Use discussions of interest at your meetings.
12. Social and other entertainments.
13. Create something of interest.
14. Discuss fires that might exist.

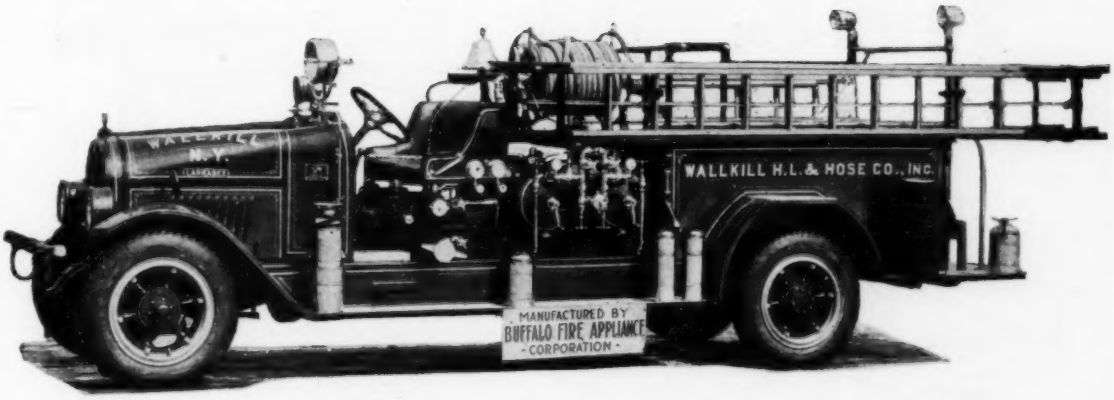
* Read before the 9th Annual Convention of the Ohio Fire Chiefs' Association, held at Warren, Ohio, on June 8, 9, and 10, 1926.

Kentucky Fire Chiefs to Meet in September

The annual convention of the Kentucky Fire Chiefs' Association is to be held at the Department Drill School, in that city, on September 13 to 15, according to advices received from the secretary-treasurer, Captain S. G. Render, Louisville, Ky., Fire Department Instructor.

The membership of the association, Captain Render informs FIRE ENGINEERING, consists of about 60 or more fire chiefs and other officials of the cities in Louisiana.

He suggests that the exhibitors of fire-fighting equipment correspond with the State Department of Fire Prevention and Rates, at Frankfort, Ky., as to space in the state reservation at the Fair Grounds, during the State Fair, September 13 to 18, which takes in the dates of the convention.



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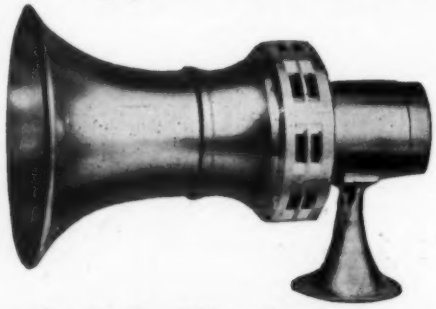

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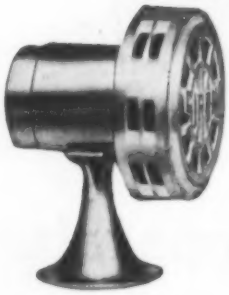

The distinctive far reaching warning of Sireno electric sirens will open up the heaviest traffic far ahead for your speeding apparatus. They will prevent collisions and costly delays in reaching fires, and so protect your men from accidents and help you cut down fire losses.

There is a Sireno of the right type and size for every fire department need—for heavy apparatus, chiefs' cars, motorcycles, and street traffic control.

Back of every one of these Sireno electric sirens is over 17 years' experience in designing and manufacturing small electric sirens exclusively. Their distinctive and penetrating sound, compact design and rugged construction have made them standard for fire department service for many years. It will pay you to replace old sirens with Sirenos and to order them on all new apparatus.

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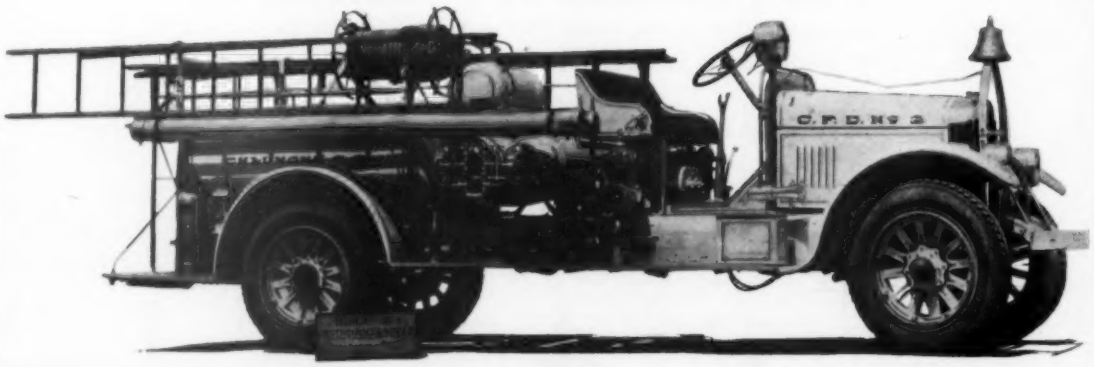

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INDUSTRIAL PLANT PROTECTION

System in Industrial Fire Protection*

By CHIEF THOMAS J. O'CONNOR,
Fire Department, General Electric Company, Schenectady, N. Y.

Industrial Fire Protection was started by an association of manufacturers for the prevention for fire losses, the Association is now one of the oldest and most successful organizations for the conservation of industrial resources.

A New England manufacturer, Zachariah Allen of Allendale, Rhode Island, started the system in 1835, ninety one years ago. He interested other manufacturers and it was agreed to share the fire losses in the factories on a mutual plan. A careful study was made of the causes of fires, and profiting by each others experience, the fire causes were removed or harnessed up so that no great amount of damage could be done on account of any one particular hazard. The construction of the buildings was changed to meet the requirements of better fire protection. Buildings substantially constructed of brick, stone or concrete with the reasonable subdivision of fire walls, and with floors and roofs of plank on timber or concrete were recognized as standard construction. The stairs, elevators and belt openings have cut-offs at the floors, and are preferably placed in towers to do away with vertical openings in the main building which permit fire to travel quickly from one story to the other.

The protection of the early factories consisted of fire pails, and standpipes for the hose lines which were supplied by small attic tanks and force pumps driven by water wheels. In the years 1852 and 1853, perforated pipe sprinklers were brought into use, the water was turned by hand when a fire was discovered, the perforated pipe system proved to be of considerable value, a very great improvement followed in this form of protection with the invention and the introduction of the automatic sprinkler in 1875. The introduction of the automatic sprinkler revolutionized the science of fire fighting and has been the main factor in bringing about the control of the fire hazard. Today all good factory buildings are sprinklered 100 per cent, the plants are provided with adequate water systems, gravity and efficient and powerful pumping systems, with liberal piping systems and pipe sizes, have all provided for greater efficiency. Well organized and equipped fire department organizations have been installed in almost every industrial plant in this country and Canada.

At the Schenectady Works of the General Electric Company we have a great number of well constructed and equipped buildings which cover over quite an extended area. There are 338 buildings erected in the plant, the floor area is 6,540,798 sq. ft. and the ground area is 3,871,387 sq. ft. We have a first class water system pumping from the Mohawk River and basin, our pumps have a delivery capacity of 23,831 gallons of water per minute, or 34,320,000 gallons per 24 hours. We have three pumping stations and a gravity tank on Bellevue Hill containing 1,036,343 gallons of water. Our yard system is fully equipped with hydrants, over 53 of the hydrants, regulation hose houses are erected equipped with 200 feet 2½" hose, of which 100 feet is connected to the hydrant ready for immediate use, and 100 feet is stored on a shelf in reserve, the rest of the hose house equipment consists of two play pipes, one shut off nozzle, spanners, ladder straps, nozzle holders, axes, bars, lantern, wrenches and gaskets.

There are 250 members in the fire department which is one of the oldest industrial fire departments in the country, having been organized 38 years ago. There are seven permanent men and the rest of the members are call men who are employed in the shops. We have a central fire station and six hose company houses located in sections which amply cover the works. There are eight hose companies and a ladder company.

The companies are formed and officered the same as any city fire company, in fact our department is run on the same plan as a city department, excepting, of course, that we perform salvage and cleaning up duty. We do not use the factory whistle for our fire alarm signals; box gongs are installed in all of the shops, the box numbers are received on these and the response is made by the fire department. A regulation Gamewell fire alarm system is installed in the works. Seven companies respond on the first alarm and all companies on the second alarm, which is our general alarm. On the first alarm one company covers the central fire station, another company remote from the fire signal is held in reserve. When the alarm is received the men respond to their hose houses and draw their apparatus to the fire excepting the men from whose building the alarm has been received; these men remain in the building and do what they can towards extinguishing the fire while the rest of the department is responding on the alarm. The box numbers on our system correspond to the building numbers making a simple and direct system, the floors are sometimes numbered with the box number, thus, Box 23 is for building 23. Box 232 is for building 23, second floor. The fire department answered 116 alarms during 1925. 40 bell alarms, and 76 still alarms. The fire loss for 1925 was $1398.76.

Department Drills

Twenty fire department drills are held during the year. Twelve watchmen's drills are held, the watchmen being drilled in fire duty. 563 Exit fire drills were held in 1925 in the factory buildings.

Regular fire department drills are held throughout the year, during the months March, April and May, the fire companies flush out all of the inside fire hose lines, all defective hose lines, valves, etc., are replaced, repairs made on fire plugs where necessary. Our standard inside fire hose line is a cotton rubber lined fire hose size 1½ inches. When the hose test has been completed the fire companies are drilled by their company commanders, and are made ready for the bell alarm drills which are held during the months of July, August, September and October. We have a day set aside in October for our hose races. At the bell alarm drills the entire fire department responds, a box is pulled just the same as at a real fire, the companies respond just as if a real fire was in progress, they report in just the same and are assigned their work of laying hose lines to cover a certain situation. A second alarm is pulled which calls out the entire department after all lines have been laid, the work is inspected after which water is passed on all lines from 3 to 5 minutes. The drill gives the men a good workout and is as near the real fire condition as we can make it.

Frequency of Drills

During the months of November, December, January and February the drills are held in the fire station hall, where lectures on fire department business are given, particular attention being given to the hazards in our own works.

Compensation

Our call members receive a reasonable guarantee of steady work, and they receive one week vacation with pay or the equivalent. The men are paid for fire duty which is of more than one hour duration.

We have a Relief Association which is maintained by the members of the fire department on a 10 cent per week rate. We pay a $9 a week sick benefit of 13 weeks disability in any one year; we pay for the first week of illness.

Inspections

Our buildings are inspected daily. The firemen in the buildings look after their apparatus and equipment, they check up their hazards, and report the conditions in to the fire department office, where the report is checked and a daily record kept on a regular printed form. The firemen also inspect the sprinkler valves and the valves controlling the fire hose lines. The regular fire department inspectors inspect all buildings, grounds, sprinkler valves, fire hose valves, underground valves, hydrants, fire pumps, hose houses, water tank, and yard equipment once per week.

Sprinkler Supervision

As the sprinklers are our first valuable line of defense, the conservation of this resource is one of our chief duties. To guard against the closed valve hazard we have in use what is known as the red tag system when any water is shut off in the works. No water is shut off for repairs unless a red tag is issued for the job which tag is issued from the fire department office. The red tag is a very conspicuous tag is 9¼ inches long, and 4 inches wide, a 4 inch stub is attached to the tag, the printed matter is the same on the tag and stub and contains the date of the job, the valve number to be closed, and the work to be done. The tag is issued by the chief of the fire department, is signed by him, and by the piper who is to shut off the water, the tag is tied on the valve to be closed, the stub is placed on a hook on a closed valve board which is hung in a conspicuous place in the

* From a paper read before the annual convention of the New York State Association of Fire Chiefs at Schenectady, N. Y.

fire department office, the piper calls on the fireman in the building where the water is to be shut off and shows him the work about to be done, the fireman looks after the section while the water is off, when the valve is again opened the fireman tries the valve to see that it is fully open, inspects the job, then he signs the tag that the job is O.K. and that the closed valve has been opened and that water is again on the sprinkler system. The piper brings the tag back to the fire department office and signs both the tag and the stub. The tag is then taken up by one of our regular inspectors who tries the valve to make sure that it has been opened; the inspector then seals the valve *open*. This is our regular procedure, and the precautions we take to guard against the closed valve hazard pays, because in practice our sprinklers have never failed to function when they were called upon to act; in many cases our sprinklers have wholly and completely extinguished fires in the works, and the attention was drawn to the situation when the sprinkler was found in operation; there was no other notification that there had been a fire. The fires I have referred to have happened at night and at times when the works had been shut down.

Any sprinkler heads that have been opened by fire are immediately replaced by our pipers, when the fire has been extinguished.

All of our principal buildings are sprinklered. We have the wet and dry systems installed, the dry system being used in the non-heated buildings, all systems are wet in the non-freezing season.

All of our special hazards receive particular attention as far as the sprinkler protection is concerned, hazards such as spraying booths where pyroxylin lacquers are used. In these cases we sprinkler the very small hoods and the exhaust piping.

The night fire company, a company assigned to the central fire station, who respond to night alarms with our fully equipped auto fire truck, replace any sprinkler heads that have been opened by fire before the company returns to the fire station, the extra sprinkler heads being carried on the fire truck.

Equipment

For portable equipment we have in service seven hose reels each carrying 500 feet 2½" hose, axes, bars, 2 play pipes, one perfection nozzle, one pipe holder, wrenches and spanners. One ladder truck carries 164 feet of ladders, the other, equipment of axes, rakes, bars, and rubber covers. One ladder truck has two 45 foot extension ladders.

There is one automobile fire truck carrying full equipment and 1,200 feet of 2½" fire hose, rubber and canvas covers, 6 foam extinguishers, gas masks, and two Eastman Deluge sets.

Shop Equipment

In addition to the automatic sprinklers and the fire hose lines, we use the following equipment:

Carbon tetrachloride extinguishers for electrical fires, in the one quart, one and one-half quarts, and the one gallon sizes, we find the carbon tetrachloride a very effective extinguisher for all kinds of electrical fires, and for such we use this chemical as our standard extinguisher. We consider the one gallon pump and pressure type of extinguisher to be the best all around extinguisher because it contains more chemical than the smaller extinguishers, and it can throw a stream farther and with more accuracy. We carry 100 lbs. pressure on the one gallon extinguishers.

Foam extinguishers, foam engines, and automatic foam devices are used for fires in dip tanks containing volatile oils. We find the foam a very effective extinguisher for smothering out oil fires. Sand is sometimes used for oil fires, also electrical fires; it acts very well at times in electrical fires but the objection is that the sand damages the machines and the machine bearings. For an oil fire that is spread out sand is a very good extinguisher, but it is of little or no use for dip tank fire. Sawdust and a compound made of sawdust and bicarbon of soda is successfully used in extinguishing fires in oils in tanks; this has a smothering effect, and is a very good extinguisher. On test we have found the plain dry sawdust just as effective as the sawdust and soda compound.

Drop covers and covers fitted with wheels which roll down an inclined track on a japan tank are used effectively, the covers operate automatically with the fusing of a fusible link at a temperature of 155 degrees F.

Asbestos blankets are also used in extinguishing fires in japan tanks. The common blanket after being wet and wrung drip free is also a very good extinguisher for tank fires. The blankets are also used for wrapping about persons whose clothing is on fire. All places where volatile oils are used blankets are installed in special holders.

Live steam is another very effective fire extinguisher for oil fires. We have the steam piped direct into tanks; the tanks are numbered and the control valve carries the same number. The control valves are located opposite the tanks on the outside wall of the building. Live steam is also used in brick cells, where one or more tanks of volatile is installed, the application of steam in this manner is very effective, a fire can be extinguished in one of the cells in less than a minute, with little or no damage to the building or contents. It is a very clean and an effective way to handle an oil fire; we have several cells in service in the Schenectady Works.

We use soda and acid extinguishers on all fires excepting oil and electrical fires.

All of our buildings are equipped with stationary fire ladders running from the ground to the roofs of the buildings.

Aluminum Dust and Zinc Dust Fires

For aluminum dust and zinc dust fires which we have in our sheradizing plant, we use common table salt as an extinguisher. We find the salt to be the most effective extinguisher. The salt is thrown on the fire just the same as sand would be used on a small oil fire.

Henry Ford Turns Fire Chief

Forest fire which raged on the property of Henry Ford within one mile of the famous historic Wayside Inn in Sudbury, Mass., for awhile threatened to endanger the safety of the inn made famous by Longfellow.

The building contains a number of relics of early American

Burned Chemical Fire Apparatus of Wayside Inn, Sudbury, Mass., Destroyed While Fighting Forest Fire.

life and antiques purchased by Mr. Ford's agents to establish an early Colonial center.

A chemical fire apparatus which is the fire protection of the inn started for the forest fire but caught fire on the way and was soon a wreck. The fire which was believed to have started from a lighted cigarette was fought by departments from Marlboro and Wayland working under the direction of Mr. Ford.

CONVENTION DATES

July 26-28—MONTANA STATE FIREMEN'S ASSOCIATION. 35th Annual Convention, Big Timber, Mont. Secretary, D. E. Moser, Bozeman, Mont.

July 27-28—WESTERN NEW YORK VOLUNTEER FIREMEN'S Association. Annual Convention, Kenmore, N. Y. Secretary, Henry A. Clark, 21 Porter Ave., Batavia, N. Y.

July 30-31—CHENANGO COUNTY FIREMEN'S ASSOCIATION. 4th Annual Convention, Sherburne, N. Y. Secretary, David Allen, Sherburne.

Aug.—CENTRAL PENNSYLVANIA VOLUNTEER FIREMEN'S ASSOCIATION. Annual Convention, Tyrone, Pa.

Aug. 2-4—COLORADO STATE FIREMEN'S ASSOCIATION. 10th Annual Convention, Denver, Col. Secretary Clinton Turnbull, Fire Department, 303 Jacobsen Bldg., Denver, Col.

Aug. 4—ROCKLAND COUNTY VOLUNTEER FIREMEN'S ASSOCIATION. 14th Annual Convention and Parade, Suffern, N. Y.

Aug. 9-14—WESTERN PENNSYLVANIA FIREMEN'S ASSOCIATION. 33rd Annual Convention, New Kensington, Pa. Secretary Convention Committee, R. A. Kanouff, New Kensington.

Aug. 16-17—NEW YORK STATE PERMANENT FIREMEN'S ASSOCIATION. 7th Annual Convention, Ogdensburg, N. Y. Secretary, Frank A. Emden, 1200 Lenox Ave., Utica; Vice-Pres. and Gen. Representative, Harold B. Nichols, 87 Oak St., Binghamton.

Aug. 16-18—UTAH STATE FIREMEN'S ASSOCIATION. Annual Convention, and Tournament, Park City, Utah. Secretary, Fred Peters, Murray, Utah.

Aug. 16-19—FIREMEN'S ASSOCIATION OF THE STATE OF NEW YORK. 54th Annual Convention, Alexandria Bay, N. Y. Secretary, Fred A. Davis, Fort Edward, N. Y.; Treasurer, William H. Swartout, 115 Main Street Ossining, N. Y.

Aug. 16-21—NORTH CAROLINA STATE FIREMEN'S ASSOCIATION. 39th Annual Convention, Atlantic Hotel, Morehead City, N. C. President, A. B. Horney, High Point; Secretary, John L. Miller, Concord.

Aug. 19-20—CONNECTICUT STATE FIREMEN'S ASSOCIATION. 43rd Annual Convention, Elks Home, Washington St., New London, Conn. Secretary, D. W. Harford, South Norwalk.

Aug. 19-21—CALIFORNIA STATE FIREMEN'S ASSOCIATION. Annual Convention, Long Beach, Cal. Secretary, H. E. Strasser, 1171 10th St., San Diego, Cal.

(*Continued on page* 744)

Emblem of
BUSINESS CHARACTER
Rice Leaders of the World Association
Represents High Standing in
NAME - PRODUCT - POLICY

Hidden Strength

BY the hidden strength of steam which the boy Watt discovered in the singing of a teakettle, the modern world of industry with its myriad sources of useful power sprang into being.

Watt invented the steam engine **by seeing and applying a principle.** Likewise, Darling Fire Hydrants owe their existence to the successful application of a sound principle conceived 25 years ago. This principle has never been changed nor has the fine quality of the original model been altered in a generation of hydrant making. When you buy Darling Fire Hydrants today you are assured of the same long years of easy operation and unfailing dependability that still characterizes the Darlings which were put into service when you were a boy.

Fire chiefs, municipal authorities and engineers will tell you that the hidden strength of these right-principled fire hydrants has never failed in time of emergency.

What more could you ask of any man-made product?

DARLING VALVE & MANUFACTURING CO.
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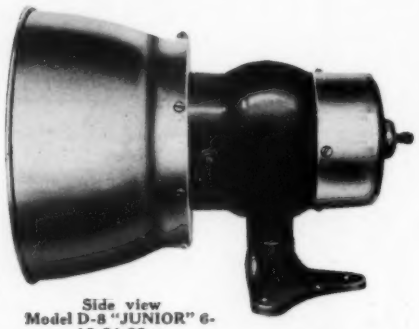
FIRE HYDRANTS AND VALVES

SIRACODE

the
SEARCHLIGHT OF SOUND
and
AUTOMATIC CODING SIRENS



Side view
Model D-8 "JUNIOR" 6-12-24-32 v.

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SIRACODE incorporates new principles that make all old types obsolete by the development of many new features, two of which are listed below:

(1) PARABOLIC ROTOR and DEFLECTOR—projecting and intensifying the sound.

(2) QUICK ACTING AUTOMATIC SHUTTER—Sounding sharp cut signals off any full Automatic Fire Alarm System or Ward System through SIRACODE RELAY Apparatus lately perfected.

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Sizes 12"—16½"—20". With SIRACODE RELAY. Prices on Application

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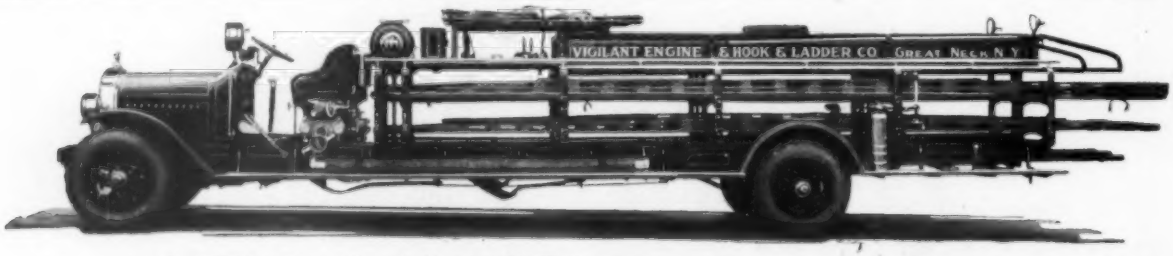

A Third MACK For Great Neck, N.Y.

In 1914 Great Neck, N. Y., bought its first piece of Mack fire apparatus—a Mack Jr. Ladder Truck. In 1922 a Mack AC Pumping Engine was added to Great Neck's Vigilant Engine, Hook and Ladder Co. The illustration above shows the third Mack unit which has just gone into active service—an AB Combination Pumping Engine, Ladder and Hose Truck.

Faith in Mack apparatus and Mack engineering sold the first unit. When new types were needed to round out this highly efficient suburban fire department, actual operating experience with Macks was the deciding factor.

The complete Mack Line of fire apparatus and municipal service equipment includes types for rural communities and small towns, as well as special and standard apparatus for the largest city departments. Mack Bulletins and catalogs describing the full line will be sent upon request. Write today.

Mack Fire Apparatus

MACK TRUCKS, Inc.
INTERNATIONAL MOTOR COMPANY
25 Broadway New York City

One hundred and seven direct MACK factory branches operate under the titles of: "MACK-INTERNATIONAL MOTOR TRUCK CORPORATION", "MACK MOTOR TRUCK COMPANY", and "MACK TRUCKS OF CANADA, LTD."

PERFORMANCE COUNTS

FIRE DEPARTMENT ACTIVITIES

Duluth Named as Convention City—The Minnesota State Firemen's Association will meet in 1927 in Duluth, Minn.

New Station for Spokane, Wash.—A new station was opened up in Spokane, Wash., on July 1.

Hyde Park, N. Y., to Purchase Pumper—A fund was voted by the firemen of Hyde Park, N. Y., for the purchase of a Mack combination pumper.

Chief Shanahan Now Battalion Chief of Pittsburgh—Former Chief Michael F. Shanahan of Pittsburgh, Pa., has been appointed battalion chief of the North Side district.

New Company Recommended for E. Cleveland, O.—The establishment of a new fire company was recommended by the National Board of Fire Underwriters following an inspection of the fire defenses of the city.

Downingtown, Pa., Orders Pumper—A Hale pumper was ordered for Downingtown, Pa. Another company in the same town has placed an order for a Seagrave triple combination pumper.

Contract Awarded for Canton, N. Y., Station—A contract was awarded for the construction of a new fire station in Canton, N. Y., to cost about $35,000. Temporary quarters will be erected until the building is completed.

Morton, Ill., Acquires Apparatus—A new Prospect Master pumper has been delivered to Morton, Ill. The pump has a capacity of 350 gallons, and the apparatus will be manned by twenty-four firemen.

Correspondence School Detective Commits Arson—A student of a detective correspondence school residing in De Kalb, Ill., and twenty-five years old, was convicted of setting fires to three buildings with a resulting loss of about $700,000.

Green County, N. Y., Plans for Convention—Plans are being made for the annual convention of the Green County Firemen's Association to be held this year at Catskill, N. Y., on Labor Day. The tentative program calls for a business session in the morning and sporting events in the afternoon.

Aerial Ladder Delivered to Macon, Ga.—A seventy-five foot aerial ladder truck was delivered to Macon, Ga., and it will be stationed at fire headquarters. When the men become familiar in handling the new apparatus, Chief Blanton plans to have a public demonstration of the ladder.

Sharpsburg, Pa., Firemen Honor Chief—The volunteer firemen of Sharpsburg, Pa., gave a farewell party to Peter Heinz, their retiring fire chief. He was presented with a suit of furniture for his new home. Chief Heinz was a member of the department since its inception in 1920.

Tacoma, Wash., Stations May Have Horse-Shoe Courts—It is possible that the various fire stations in Tacoma, Wash., may have horse-shoe pitching courts. The mayor has offered a donation of four horse shoes to each of the fire stations and a junk company will donate old Ford axles for pegs.

Chicago Protects Eucharistic Congress—The International Eucharistic Congress held in Chicago, Ill., was protected by a chemical engine and a pumper which was held in readiness a short distance from the place where the congress was held.

Plumber Starts Fires at Bellevue Hospital—A plumber employed at the Bellevue Hospital, New York City, was held on the charge of setting fire to the hospital in order to get a thrill. The plumber confessed to setting three fires, two of which were in wards filled with patients.

N. Y. Firemen Injured on Way to Blaze—Six firemen of Ladder Company No. 19 of New York City were injured while on the way to a trifling fire when the apparatus was run into by a heavily loaded dirt truck. The driver of the fire apparatus was seriously injured, and the captain received injuries about the hip and face.

Blaze Interferes with Tournament Parade—While marching in the parade that preceded the tournament of the Southern New York Volunteer Firemen's Association at Islip, the companies of the Islip department were called out of line to answer a fire alarm. The blaze was soon extinguished and the companies returned to the line of march.

Cohasset, Mass., Has New Ladder Truck—Cohasset, Mass., has acquired a White city service truck that carries eleven ladders of various sizes. The department consists of four companies equipped with White apparatus and one with a Ford-LaFrance. They have also a Ford truck equipped for fighting brush fires.

New Safety Belt for Portland, Ore.—The firemen of Portland, Ore., have been equipped with a new type of safety belt. During one of the tests, the belt was used to carry a man down a fifteen-story building. Lieutenant Sherk, the inventor of the belt, is a member of the Portland department for the past eighteen years.

Celluloid Cutting Machine Causes Large Fire—A large fire in which many lives were lost resulted from the friction in a machine that was used to cut celluloid in a Rockford, Ill., factory. A one to two story brick and wood building housed the toy factory. The loss to building and contents was $20,000, and to the personnel, five dead and eight injured.

Maryland Firemen Asked to Fight Forest Fires—The state forester of Maryland, in addressing a gathering of the Maryland State Firemen's Association, asked the firemen for their cooperation in the fighting of the forest fires. State and county will provide the necessary tools and will pay the firemen the regular pay allowed to wardens and helpers.

Four Philadelphia Firemen Hurt—Four firemen of Philadelphia, Pa., were hurt while on the way to a fire. The apparatus on which they were responding was rammed by a large van which overturned the fire apparatus. Several of the men were seriously hurt. The men were on their way to extinguish a fire started by a six-year-old boy tossing a match into a waste basket.

Urge Oregon State Fire Chiefs' College—The formation of a fire chief's college in Corvallis, Ore., every year has been urged, and the plan is receiving the support of the state fire marshal. The state legislature will be asked to set aside a fund to defray the expenses of the college. A fire college in Oregon, it is stated, will be a money saver to the state in reference to the fire losses.

Work Started on Albany, N. Y., Station.—Construction has started on the new fire station for Albany, N. Y. The building will cost $75,000 when completed. It will be erected from tapestry brick with limestone trim and a slate roof. The building will harmonize with the structures in the immediate vicinity. The installation of the fire alarm equipment will be under the direction of Chief Michael J. Fleming.

Salary Increase Urged for Spokane, Wash.—An increase in the salary of the members of the Spokane, Wash., fire department is being urged. An increase is asked from $120 a month, the present salary, to $135 for first year; from $132.50 to $145 for second year men; from $144 to $155 for third year men. It is recommended that lieutenants receiving $149.50 be given a considerable increase so as to make promotion mean more to the men. The men work sixteen hours instead of twelve as is done under the two-platoon system. In 1922, the salaries of the men were cut six dollars a month.

Fire Alarm Notes

New System Installed in Port Arthur, Tex.—A new fire alarm transmission system has been installed in Port Arthur, Tex.

Allentown, Pa., Has New Transmitter—A Gamewell four-dial fire alarm transmitter will be installed in Allentown, Pa. The device has been installed at a cost of almost $800.

Lynbrook, N. Y., Tests Fire Whistle—The new fire whistle installed in Lynbrook, L. I., N. Y., has been given its official test.

Kalamazoo Fire Alarm Building Completed—The construction of the building that will house the Gamewell fire alarm system in Kalamazoo, Mich., is completed. The building is of fireproof construction made of concrete, brick and steel—it is two stories in height.

Riverside, Cal., Chief Inspects Fire Alarm—Chief Hutchinson of Riverside, Cal., made a tour of inspection of the fire alarm system of the city. With the coming of the dry season, the chief wants to be sure that the department will operate at its utmost efficiency.

PROPOSED IMPROVEMENTS

Riverside, Burlington Co., N. J.—Ordinance has been passed authorizing a $4,000 bond issue for the purchase of motor fire apparatus.

Frankfort, Herkimer Co., N. Y.—Village to vote soon on a $9,000 bond issue for purchase of fire apparatus.

Oakland, Alameda Co., Calif.—Fire Chief Samuel Short and Commissioner Frank Colburn Inspected Los Angeles Fire Department with view of making improvements in fire department of Oakland.

San Francisco, Calif.—Specifications made for purchase of $90,000 worth of new equipment. Bids to be called for soon.

Los Gatos, Santa Clara Co., Calif.—At election held June 29, it was voted in favor of a $30,000 bond issue for erection of fire station and purchase of apparatus.

Ireton, Sioux Co., Iowa—Center Township raising funds for purchase of fire apparatus for use in farm fires.

Long Prairie, Todd Co., Minn.—Fire department to purchase 2 chemical tanks of 40 gals. capacity each.

Columbus Grove, Putnam Co., Ohio—Considering the purchase of motorized fire apparatus.

Molalla, Clackamas Co., Ore.—New fire station to be constructed.

Saratoga Springs, Saratoga Co., N. Y.—State Fire Insurance Rating Association recommended the purchase of an aerial ladder truck with water tower attached, additional permanent firemen, and the detachment of fire alarm headquarters from the present fire station.

El Dorado, Union Co., Ark.—Ordinance passed authorizing the purchase of a new piece of apparatus at cost of $12,500.

Adair, Adair Co., Iowa—Adair Fire Company to purchase fire apparatus if City Council agrees to erect a fire station to house the apparatus.

Kane, McKean Co., Penn.—Kane Fire Department raising funds for purchase of fire equipment.

Aberdeen, Brown Co., S. Dak.—Fire Commissioner Kruger recommended the purchase of an aerial ladder and water tower combined.

Maywood, Los Angles Co., Cal.—May vote on a bond issue for purchase of fire apparatus and fire station for use in county. A. A. Larkey, City Clerk.

Madera, Madera, Co., Cal.—Board of Trustees is having fire hose inspected with idea of purchasing new hose if needed.

Germania, Atlantic Co., (mail Cologne) N. J.—Charter granted Germania Volunteer Fire Co. No. 2. Funds to be raised for purchase of fire apparatus and erection of fire house.

Sebring, Mahoning Co., Ohio—The purchase of a pumper and a pulmotor for fire department is being considered by the Sebring Business Men's Association.

Newark, N. J.—Ordinance has been adopted providing for issuance of $100,000 bonds for fire apparatus.

Half Moon Bay, San Mateo, Co., Cal.—Pumper to be purchased for fire department.

Bessemer, Jefferson Co., Ala.—Chief Leo Hill petitioned City Council to purchase one pumper and 2,000 feet of fire hose at an early date.

Jefferson City, Cole Co., Mo.—Volunteer fire Department recommended the installation of more fire alarm boxes and the purchase of additional fire hose.

Lomita Park, Los Angeles Co., Calif.—Creation of fire district was voted at special election recently. Fire Commissioner planning the purchase of a chemical car.

San Bruno, San Mateo Co., Calif.—San Mateo County Association of Firemen making survey of fire equipment of the district with view of establishing standardization of hose and hydrants, and purchase of additional equipment.

Bellefontaine, Logan Co., Ohio—W. W. Barton, Chairman of Safety Commitee, stated that City Council considering a bond election for the purchase of additional fire equipment.

Steelton, Dauphin Co., Pa.—All bids rejected for fire apparatus. New bids will be called for and opened in thirty days.

Bridgewater, Bucks Co., Pa.—Bids are being received for fire engine for borough.

Point Pleasant, Mason Co., W. Va.—Funds being raised for purchase of fire apparatus and equipment.

Weirton, Hancock Co., W. Va.—Volunteer firemen to purchase five gas masks.

Newell, Buena Vista Co., Iowa—Fire engine to be purchased for fire department.

Ferndale, Oakland Co., Mich.—New chemical car to be purchased by fire department.

Pontiac, Oakland Co., Mich.—City to construct a third fire station.

Denver, Colo.—Engine Co. No. 16 to be enlarged and additional men will be added. A triple combination car will also be added. Remodeling will be completed ready for new equipment about June 1.

Attractive Territory Open for Apparatus Salesman

If you are looking for a profitable connection with a well-known and progressive fire apparatus manufacturer, send complete information regarding your qualifications to Box 123, c/o FIRE ENGINEERING, 225 West 34th St., N. Y. C.
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Information Wanted on CODE SIREN Fire Alarm

Town of four thousand population covering area two miles square wants information and prices for installation of Code Siren Fire Alarm and six to ten signal boxes distributed in radius of half to mile of centrally located firehouse.
Borough Clerk, Little Ferry, N. J.
7-25.

FOR SALE Fire Apparatus

American-LaFrance Triple Combination, Type 75. Address Box 122, % FIRE ENGINEERING, 225 West 34th St., New York City.
7-25, 10, 25.

CONVENTION DATES

(*Continued from page* 740)

Aug. 24-27—DOMINION ASSOCIATION OF FIRE CHIEFS. 18th Annual Convention, Windsor, Ont. Secretary, Chief James Armstrong, Kingston, Ont.

Sept. 1-2—MISSOURI STATE ASSOCIATION OF FIRE CHIEFS. 4th Annual Convention, Springfield, Mo., Secretary, District Chief J. T. Lynch, Kansas City, Mo.; President, Chief Horace G. Regan, St. Joseph.

Sept. 1-2—MISSOURI STATE ASSOCIATION OF FIRE FIGHTERS. 1st Annual Convention, Springfield, Mo. (Joint session, both associations, afternoon of Sept. 2) Secretary, M. J. Mulvoy, St. Louis, Mo.; President, Capt. A. J. Jones, St. Joseph.

Sept. 6—GREEN COUNTY FIREMEN'S ASSOCIATION. Annual Convention, Labor Day, at Catskill, N. Y.

Sept. 8-10—IDAHO STATE FIREMEN'S ASSOCIATION. Annual Convention, Buhl, Idaho. President, W. E. Gelling, Rupert, Idaho. Chairman Publicity Committee, A.vin H. Reading, Buhl.

Sept. 13-15—KENTUCKY FIRE CHIEFS' ASSOCIATION. Annual Convention, Fire Department Drill School, Louisville, Ky. Secretary, Captain S. G. Render, Fire Department Instructor, 303 Speed Building, Louisville. For exhibits at State Fair, Sept. 13-18, address State Department of Fire Prevention and Rates, Frankfort, Ky.

Sept. 14-15—IOWA STATE FIREMEN'S ASSOCIATION. 49th Annual Convention, Manning, Ia. Secretary, E. E. Parsons, Marion.

Sept. 14-16—MASSACHUSETTS STATE FIREMEN'S ASSOCIATION. 47th Annual Convention, Fall River, Mass. Secretary, Daniel J. Looney, 1046 Old South Building, Boston, Mass.

Sept. 21-24—INTERNATIONAL ASSOCIATION OF MUNICIPAL ELECTRICIANS. 30th Annual Convention, Battery Park Hotel, Ashville, N. C. Secretary, William R. Arkbuckle, Supt. Fire Alarm, Bayonne, N. J. Chairman Exhibit Committee, Daniel J. Morgan, Sales Engr., Hazard Mfg. Co., Wilkes-Barre, Pa.

Sept. 22-23—INDIANA STATE FIREMEN'S ASSOCIATION. 9th Annual Convention, Marion, Ind. Secretary, Frank H. Miller, Fire Headquarters, Terre Haute, Ind.

Sept. 24—NEW JERSEY FIRE CHIEFS' ASSOCIATION. Annual Convention, Atlantic City, N. J. Secretary, Fred A. Trowbridge, 17 South Street, Morristown, N. J.

Sept. 24-25—NEW JERSEY STATE FIREMEN'S ASSOCIATION. 49th Annual Convention, Atlantic City, N. J. Headquarters, Executive Committee, Hotel Dennis. Secretary, William Exall, Chamber of Commerce Building, Newark, N. J.

Sept. 27-29—ARKANSAS STATE FIREMEN'S ASSOCIATION. Annual Convention, Jonesboro, Ark. Date of meeting tentative. H. S Compton, secretary. Central Fire Station. Little Rock, Ark.

Sept. 27-29—KANSAS STATE FIRE CHIEFS AND STATE FIREMEN'S ASSOCIATIONS. 10th and 39th Annual Conventions respectively, Manhattan, Kan. Secretary, Chief K. D. Doyle, Wamego, Kan.

Oct. 4-9—INTERNATIONAL ASSOCIATION OF FIRE FIGHTERS. Annual Convention, Hotel Adelphia, Philadelphia, Pa. Secretary-Treasurer, Geo. J. Richardson, Rooms 105-6, A. F. of L. Bldg., Washington, D. C.

Oct. 5-7—FIREMEN'S ASSOCIATION OF THE STATE OF PENNSYLVANIA. Annual Convention, Philadelphia, Pa. Secretary Charles F. Clark, 411 Bellevue Avenue, Wayne, Pa.

Oct. 12-15—PACIFIC COST ASSOCIATION OF FIRE CHIEFS. 33rd Annual Convention, Fresno, Cal. Secretary, Chief Jay W. Stevens, 1014 Merchants Exchange Building, San Francisco, Cal.

Oct. 19-22—INTERNATIONAL ASSOCIATION OF FIRE ENGINEERS. 54th Annual Convention, Hotel Roosevelt, New Orleans, La. Exhibits at U. S. Army Base Bldg., Dauphine and Poland Sts. Secretary, Chief James J. Mulcahy, Yonkers, N. Y. Chairman Exhbit Committee, Chief Wm. F. Daley, Brockton, Mass.

Oct. 20—OFFICERS' ASSO. FIRE PATROLS, SALVAGE CORPS AND PROTECTIVE DEPTS. OF U. S. AND CANADA. Meeting at New Orleans in connection with I. A. F. E. Convention. Secretary, John Ashmead, 76 William St., New York City.

Jan. 18-20, 1927—NEBRASKA STATE VOLUNTEER FIREMEN'S ASSOCIATION. 45th Annual Convention, Columbus, Neb. Secretary, H. A. Webbert, Kearney.

Department and Other Reports Received

Belmont, Mass.—Annual report of the chief of the fire department; nine pages of the activities of this department.

New Rochelle, N. Y.—Annual report of the fire department; eleven pages complete with many tables.

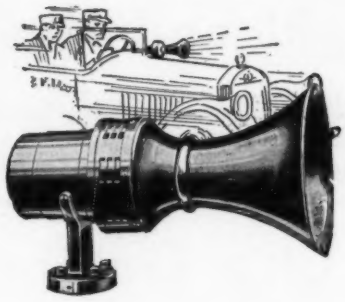
New South Wales.—Sixteenth annual report of the board of fire commissioners of New South Wales; 25 page report containing many tables.

Wilmington, Del.—Annual report of the Bureau of Fire of Wilmington, Del.; 54 pages with many tables of the department's activities.

Boston Protective Department, Boston, Mass.—Fifty-second annual report of the activities of this department; twenty-four pages complete with charts showing the activities and the work accomplished.

Fire Marshal of Louisiana—Twenty-first annual report of the fire marshal of Louisiana; thirty-one pages, illustrated and containing tables of the classification of fires in the state, and the deaths and injuries resulting therefrom.

Herkimer, N. Y.—Thirtieth annual report of the municipal commission with the heading "30 Years Successful Municipal Operations." Report of all departments are embodied in this fifty-eight page book.



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This is the powerful electrical Siren used by leading fire Chiefs. It is ideal for all fire apparatus and other vehicles requiring a commanding signal.

We will send you a Sterling No. 12 complete with 10 feet of dual cable, for free examination and trial. You may return it if not fully satisfied.

Price complete.....$40.00

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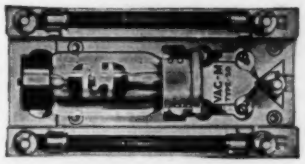

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Your fire alarm system when out of commission is worthless. Your men and apparatus are of no value until you get the alarm. The safety of your city is largely dependent upon the never-failing operation of your fire alarm system.

It is, therefore, a practice among wide-awake Chiefs and Fire Alarm Superintendents to install VAC-M Arresters to protect their delicate fire alarm instruments from the dangers of lightning and short-circuits and thereby insure continuous operation.

Is your system VAC-M equipped? Are you trusting to luck when VAC-M Arresters will provide absolute protection?

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Successful Since Sixty-Eight

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In the manufacture of fire alarm signals, Union Water Meter Company has always realized that absolute perfection in design and workmanship are primary requirements.

Because of faithful adherence to these principles down through the years the Worcester Fire Alarm Signal has gained its high reputation.

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Hundreds of Cities over the country using our sirens.

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"It pierces the air"

You Will Eventually Buy B & M's

Fire officials find the powerful B & M fire apparatus Siren to be ideal to meet modern street traffic conditions. Electrically-driven Sirens cannot be operated successfully by storage batteries in hard and continuous service. Hand-rotated Sirens are both exhausting and dangerous to the operater. Therefore, the mechanically-driven B & M Siren with its piercing screech that can be heard for miles is the ideal fire apparatus Siren.

Send for Complete Information

B & M MANUFACTURING CO.

Lester H. Miles, Proprietor

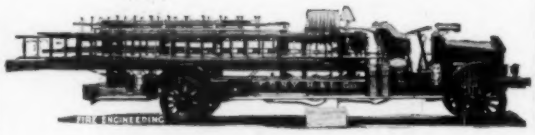
931 So. Main St. Los Angeles, Calif.

A Portable Fire Pump that is Efficient

The Barton Portable Fire Pump will furnish adequate fire protection for cities, towns and villages having motor driven apparatus. It is of special advantage in towns and villages having no paid department. It is always ready for emergency service and can furnish abundant capacity and pressure from any source of water supply. The Barton Portable Fire Pump provides efficient fire protection at low cost.

AMERICAN STEAM PUMP CO.
Battle Creek, Michigan

Light and Heavy



City Service
Hook & Ladder Apparatus

We build any type of Apparatus required and can furnish High Grade Ladders in either Trussed or Solid Side types. Each Ladder is carefully made, ironed, and equipped for safety, strength and service.

Up-to-date FIRE FIGHTING APPLIANCES.

Write us when interested.

Combination Ladder Co., Inc.
381 Fountain Street Providence, R. I.

MATHEWS
(Reg. U. S. Pat. Off.)
FIRE HYDRANTS
for
DOMESTIC
and
HIGH PRESSURE
Service

Note—

The positive waste valve.

All operating threads are above the Stuffing box.

No toggles, small screws or other small, quick-wearing parts.

All moving parts are bronze or bronze bushed.

The outside casing permits replacing a two-way standpipe with a steamer and two-way standpipe without digging up the ground.

Valves and Boxes
Cast Iron Pipe and Fittings
R. D. WOOD & CO.
Phila., Pa.

Shuredry **Salvage Covers**

COST LESS—
WEIGH LESS—
MORE EASILY HANDLED

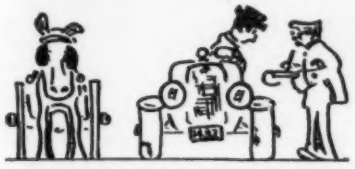
Chief Boyd, of the Knoxville, Tenn., Fire Department, has used "Shuredry" Salvage Covers for eight years. He says: "They are *waterproof, not affected by the weather, easy to handle, and altogether the most satisfactory covers we have ever used.*"

They do not freeze in winter, nor become tacky in summer. They are not subject to spontaneous combustion, nor to cracking where folded. One man can carry four up a ladder at one time.

Made in standard sizes. Write our nearest plant for samples and prices.

FULTON BAG & COTTON MILLS
Manufacturers since 1870
Atlanta, New Orleans, Brooklyn, St. Louis, Dallas, Minneapolis

FALSE ALARMS



Pulled for Parking Near a Plug

DO'S AND DONT'S

By W. S. RATHBUN,
Colorado State Firemen's Association

Don't hold regular meetings. We have a regular organization, with a bozo at the head called the Chief, and assistant bozos called Assistant Chief, Captain, Foreman, Lieutenant and What-not. We haven't any business to transact because whatever comes up is dumped in the waste basket. Once in a while some bright smoke expeller tries to start something he says is for the good of the town or the department but we soon shut him up. We never do anything, anyway. So why meet?

Don't hold regular drills. We already know all there is to know about fires and these new fangled notions are the bunk. Nobody can teach us anything. It isn't any use learning how to use ladders and to take up hose lines to the roof. We stand off and shoot at it from the street. It saves work. Another thing, don't lay hose until you have been to the fire and have seen if it is needed. Sometimes you can save work that way. Of course, we lose a house now and then but we have saved the lot every time.

Don't worry about your hose and apparatus. We never touch ours from one fire to the next. A little dirt don't hurt anything. What difference does it make if the jacket does rot and the rubber dry out and crack? The town can buy more. Some fellows told us we ought to run water thru all of our hose every three months to keep it in good condition. Said it would make the hose last twice as long if we took good care of it. Yeh! He didn't say how long we would last. Think we want to break our backs? Some of the boys wouldn't be on the department a week if we asked them to work. That reminds me of a good joke on the Chief. Last week had a run and he grabbed his helmet and put it on in a hurry and you should have seen him. Some of the chickens that roost in the fire house had made a nest in it and he had an egg shampoo before he knew it. Said it was all right, he did; said an egg shampoo would cost him a dollar at the barber shop. But he didn't go to the fire and nobody else would wear the helmet so we didn't have any Chief. Generally we have three or four.

Don't miss any banquets. The town gives us one every year and that's the time we find out how many firemen belong to the fire department. If you don't go you will not know how valuable you are to the town and you will miss a good feed. I don't know whether or not we will have one this year. Moore, the fellow that got it up last year and chipped in most of the money, had a fire at his home last month in the middle of the night. I heard the fire bell but I didn't go because I had just gotten into bed and was too tired. Seems like nearly everyone else was too, so nobody on the fire department went and some other fellows put it out. Some of our fellows kicked the next day because nobody else had any right to take the apparatus out unless we were there to give orders. These fellows that butted in didn't know that we had loaned the ladders to a painter and some hose to a man who wanted to water his stock, so they made a big talk about how careless we were. There wasn't any cause for Moore to get mad about it though. Accidents will happen. Why didn't he have his fire in the day time?

Clint asked me for some Do's too. The town clerk paid our dues this year and I don't know any others without sitting around and thinking a lot and I'm tired of writing all this advice, so I'll just leave them to him.

A COLD FORTUNE

"I hear your dad just lost a cool million in a business deal."

"Quite so," replied the other, "an ice factory he just bought burned to the ground."

ACCIDENTS WILL HAPPEN

The following item appears as a news note: A section of the fire escape on the girls' dormitory fell to the ground, and six fellows were injured. You are at liberty to draw your own conclusions.

GOING PREPARED

The wife of the fire apparatus salesman was preparing him for one of his long distance trips. After making sure that he had enough extra hankerchiefs, and other incidentals, she said, "And don't forget, Will, to take enough of those dotted lines with you."

Long: "Where did you get that black eye?

Short: "You know that lady down the street whose husband is a fireman in the night platoon—?"

Long: "Yes."

Short: "Well—he isn't. He's on the day platoon.

Here lie firemen Patrick and Ted.
They saw a green light, when they should have seen red.

EXPLAINED

It was a court of inquiry trying to ascertain the reason for a domestic setting fire to the home of her employer.

"Why did you burn your employer's house down?"

"I wanted to see my sweetheart in a hurry, and he being a fireman . . ."

NOT SO GOOD

The new driver of the ladder truck lay covered with dust by the roadside. Near him was the lieutenant of the company. Wrapped around the tree was what was left of the fire apparatus.

"I—I thought y-you told me you were experienced," said the officer after he became conscious of his surroundings.

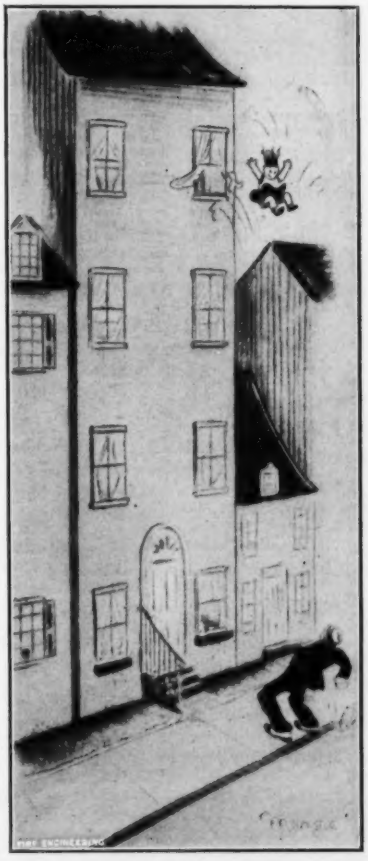
"I am," asserted the driver. "Why I drove three years for an officer during the war and I was wounded each year."

"Wounded! Only wounded!" said the fire department officer with contempt. "H—l, he must have been a poor shot or he would have gotten you the first time."

A SHORT STORY

During the English class, the instructor asked, "Can you give me a sentence with the word patroled?"

"The fire alarm rang and patroled out of bed."



The fireman, whose daughter believed in following in her father's footsteps, was somewhat startled upon returning home on his off-shift to hear his daughter shout with great enthusiasm "Yoo-hoo, Daddy! Catch me!"—*Collier's.*

Demonstration of "Foamite" Automatic Extinguisher at New England Fire Chiefs' Convention, Manchester, N. H., June 22–24

Upper: Just as extinguishers went into operation on fire in 60 sq. foot pit of oil; lower: A few seconds later—fire completely smothered by foam blanket.

OKLAHOMA STATE FIREMEN HOLD SCHOOL AND CONVENTION

More Than 300 Registered at Gathering—Three Schools for Firemen Held Simultaneously

THE Oklahoma State Firemen's Association, which was organized thirty-two years ago, held the most successful gathering in its history, at Enid, Okla.

In connection with the gathering, the officials arranged for a fire college to give the delegates an opportunity to learn some of the important fundamentals of the work of the firemen. While the school was being held, various entertainments were arranged for the women who accompanied the men to the convention; this part of the program was in charge of Mrs. Jay Weissinger, wife of the chief of the fire department at Enid.

E. H. Miller was superintendent of the A section of the school with George B. Higginbotham of Muskogee, secretary. Leon L. Wolf, drill master of the Cincinnati fire department, was instructor in drills with J. C. Osborne, drill master of the Oklahoma City fire department, as assistant instructor.

The rudiments of elementary training were given, demonstrating proper methods of using fire apparatus, equipment and appliances. Demonstrations were also given in first aid work and artificial resuscitation.

In the B section of the school, William Collier was chairman with George K. Brown, secretary. The instructors consisted of Clarence Goldsmith, assistant chief engineer of the National Board of Fire Underwriters, Chicago; George B. Goff, chief fire department, Oklahoma City, and Charles Maulen, Gamewell Fire Alarm Company.

The topics discussed were Fire Control and Extinguishment from the Viewpoint of the Chief Executive Officer; Ventilating in Fire-Fighting, Hydraulics of Fire Streams, and Fire Alarms.

Section C of the school was in charge of Tom Lyle, superintendent, and Frank Scott, secretary. The following, all from the Oklahoma Inspection Bureau, were instructors—F. C. Trask, Clifford Anderson and H. J. Clark. Courses were given on building construction, electrical installations, mechanical installations, and inspections.

Motion pictures furnished by the National Board of Fire Underwriters were exhibited one of the evenings of the convention.

At one of the sessions it was voted to hold next year's convention at Okmulgee, the date to be left to the executive board. The new officers elected are: J. E. Taplin, Blackwell, president; Wesley Bush, Tulsa, first vice-president; George Higginbotham, Muskogee, second vice-president; E. H. Miller, McAlester, third vice-president; Charles Slemp, secretary-treasurer (re-elected for the fifteenth time); and J. A. Norris, Tulsa, sergeant-at-arms.

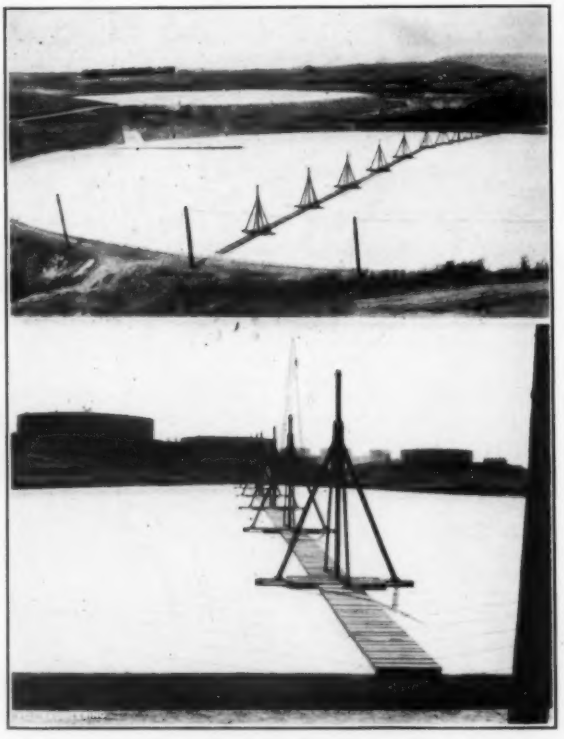
Little Rock to Improve Department

A number of important steps have been taken towards the improvement of the fire department of Little Rock, Ark.

A drill tower will be erected for the training of the local firemen. All members of the fire department will be asked to undergo a rigorous physical examination and all unable to pass, will be retired on a pension. New applications for joining the department will be considered only from those between the ages of twenty-one and thirty-one.

An appropriation of $1,000 was made for the purchase of new turn out suits and helmets. An inspection force will be organized from among the officers. Approximately 3,000 feet of fire hose has been ordered.

The department consists of seventy-one men, a chief and two assistant chiefs. It cost the city $153,996 in 1925 to maintain this city service. A recommendation has been made by Chief Hafer that the salaries be increased about fifteen per cent.



Device to Remove Danger of Lightning Striking Oil Tanks.

On the oil tanks in Martinez, Cal., a device has been installed designed to eliminate the hazard of lightning setting the large reservoirs of oil on fire. Wires are stretched over the tanks to receive the secondary charge of the bolt of lightning. The distant towers shown in the illustrations are placed to receive the primary charge. This is said to be the first and only installation of this character for the elimination of the lightning hazard in the oil industry.

The Perfect Satisfaction and economy of wearing the

"FAMOUS KALAMAZOO"

Firemen's Uniforms has been proven by thousands of firemen. Catalog F501 will tell you all about them.

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of Every Description

QUALITY GUARANTEED

Right Prices
Prompt Deliveries

We Also Make the Durable

"ROSS" HELMET

Our latest catalogue and price list will gladly be sent on request.

EVERSON-ROSS CO., INC.
88 Chambers St., New York

Eastman

Nozzles and Deluge Sets

Are Designed by Engineers

who, for over thirty years, have specialized in equipment for producing superior fire-fighting streams in all sizes unsurpassed for solidity, distance and effectiveness, and safely handled under all pressures.

Write for Catalog

Samuel Eastman Co.
Concord, N. H.

JOHN H. CLAY, INC.

1320 Ridge Ave., Philadelphia, Pa.
Established 1864

Manufacturer Fire Dept. Supplies: Automatic Door Spring Outfits and All Kinds of Hydrant Connections.

S & M Special Lighting Equipment

Spot-Lites for Chiefs' Cars. Pick-Up-Lites for Fire Apparatus.

Model No. 90
Diameter Reflector 7½".
Light Projection 3000 ft.

The S & M Spot-Lite is recognized everywhere as standard of excellence. The brilliancy of the powerful beam of light produced by the scientific S & M Reflector cuts far into the distance and insures a generous field of illumination.

The S & M Pick-up-Lite is the same as the Spot-Lite except that it is equipped with a special diffusing lense to spread the light, and when installed on the rear of the apparatus it is an indispensable aid in picking up hose, ladders, or any fire department equipment.

Write for descriptive catalog and prices.

S & M LAMP CO. (Inc), 118 W. 36th., Los Angeles

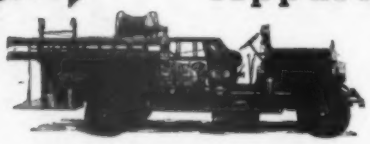
BI-LATERAL FIRE HOSE

THE BI-LATERAL FIRE HOSE CO.
230 West Randolph St.
Chicago, Ill.

If you will furnish your firemen with a soft pliable hose that will stand the gaff, using the rocker lug coupling, they can do better and more efficient work. Bi-Lateral Fire Hose fills this bill.

We can tell you something else about it that will prove interesting.

Sanford Fire Apparatus



All Types and Sizes

Fire Apparatus Division
SANFORD MOTOR TRUCK CO.
Syracuse, N. Y.

Builders of Quality Products for 15 Years

GENUINE
FOAMITE PROTECTION

Splashproof Extinguishers — Chemical Tanks — Motorized Equipment

For Every Kind of Fire
"CHILDS" MOTOR FIRE APPARATUS
FOAMITE-CHILDS CORP'N, Fire Protection Engineers
138 Turner Street, Utica, N. Y.

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THROUGH constant improvement in design, methods of manufacture and materials the *Hale* pump has steadily forged ahead.

HALE FIRE PUMP CO.
Conshohocken, Pa.

THE INTERNATIONAL LINE includes a Speed Truck for 2000-pound loads and Heavy-Duty Trucks ranging from 3000 to 10,000 pounds, maximum capacities. Municipal equipment available for every purpose. 111 direct Company branches in the United States.

INTERNATIONAL HARVESTER COMPANY
606 S. Michigan Ave of America [Incorporated] Chicago, Ill.

INTERNATIONAL HARVESTER COMPANY TRUCKS

MAXIM City Service TRUCKS

with Maxim-Built Ladders

are unsurpassed for design, completeness of equipment and sturdiness of construction. Like all Maxim apparatus and equipment, they are built "Just a Little Better All Around."

MAXIM MOTOR COMPANY, Middleboro, Mass.
Metropolitan Sales Agents:
The Woodhouse Manufacturing Co., 35 Warren St., New York

The STOUGHTON

Community Fire Fighter is Designed Especially for Small Towns

Fire apparatus for volunteer and small town fire departments must be designed, built and equipped to meet particular requirements. It must be a combination of several distinct types built for city use. It must be complete in every detail.

The Stoughton, the *Original Community Fire Fighter*, is designed to meet these requirements and made in three sizes,—300—350 and 500 gallon capacities. Each model and every piece of apparatus guaranteed to pass the National Board of Fire Underwriters' twelve-hour pumping tests.

May We Send Complete Information?

STOUGHTON WAGON COMPANY
FIRE EQUIPMENT DIVISION, STOUGHTON, WIS.
STOUGHTON FIRE APPARATUS CO., 230 W. 57th St., New York City, Eastern Representatives

The "Fyr-Foe" Twin Pumper

for Fords

The "Fyr-Foe Auto-Powered" Pumper makes use of the 15 brake horse-power in a Ford car or truck at a price within range of the smallest communities, providing adequate fire protection at a fraction of the cost of big apparatus.

Send for complete details.

Jaeger Portable Power Corp.
Woodbridge at Rivard St., Detroit, Mich.

HAHN

Motor Fire Apparatus

Write for literature and prices on our 250, 350, 500 and 750-gallon triple combinations, chemical and hose combinations and city service trucks.

Hahn Motor Truck Co.,
Hamburg, Pa.

When You're in a Hurry for Complete Information

on new equipment you plan to order for your department, then use this page to get it P. D. Q.

Just run down the list of equipment, fill out the coupon below, and mail it to us with the numbers that indicate the equipment in which you are interested.

We will then notify reliable manufacturers of your interest in such equipment and request that without cost to you or any obligation they send you the information you desire.

They will gladly do this. So go to it! Ask for what you want. This page is for your convenience. Use it now—and whenever you decide to buy new equipment of any kind.

Here's Your List of Fire Protection Equipment and Supplies

1 Acid Siphons.
2 Adaptors for Changing Hydrant Threads.
3 Acid Jars and Rings.
4 Aerial Ladders, Detachable.
5 Aerial Trucks.
6 Alarms, Siren, Electric.
7 Alarm Systems, Industrial.
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110 Wrecking Trucks.

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225 West 34th St., New York City.

As a fire protection official I should like to have descriptive literature and complete information mailed to me, without cost or obligation, on the equipment indicated by the following numbers:

Date.....

Name .....

Position .....

Street .....

City and State.....

Nos. .....

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Nos. .....

For Information on Any Equipment Not Listed Above. Write on This Page or Use Separate Sheet.

July 25, 1926

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Over 5,000 Victor Gas Masks in Service

Full Line Fire Dept. Supplies and Equipment.

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DANGER

from Smoke and Gases eliminated by using the

DONTFEAR

Smoke and Fume Respirator

Protection for the men results in greatly increased efficiency and quickly extinguished fires.

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No Sponge. Price $5. With Airtight Goggles $5.60

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C. W. MITCHELL

FIRE ALARM SPECIALIST

REPRESENTING

HARRINGTON-SEABERG

FIRE ALARM, POLICE SIGNALS

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30 Days Free Trial

For Volunteer Fire Departments in towns of from 300 to 5,000 population, there isn't a Siren or a system in the world to equal the Erick. Night and day—year in and year out—it offers best protection to lives and property. The Erick is the only Siren using one big whistle on a powerful 3 and 5 h. p. motor which throws its sound evenly in all directions—louder and more penetratingly than all others. Write for full information and details of liberal 30 Day Free Trial Offer.

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THE DENVER SIREN

Now used in 43 of the United States, Canada and abroad.

Motor driven on any electric circuit.

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Hendrie & Bolthoff Mfg. and Supply Co.

Denver — Colorado

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FIRE BOAT EQUIPMENT

Invincible and Callahan Nozzles

Fire Department Supplies

are in use throughout the country and giving unsurpassed service.

Every fire official should be fully acquainted with Morse equipment and have our catalog and other descriptive literature on file for ready reference whenever considering the purchase of new equipment.

You will find that it pays.

Write for Catalog

Andrew J. Morse & Son, Inc.

221 High St. Established 1837 Boston, Mass.

The "Corey" Fire Hydrant of the improved Rensselaer type is the easiest to operate of any on the market.

Ask for prices and details

FILL IN AND MAIL TO

RENSSELAER VALVE CO., Troy, N. Y.
Send me Hydrant Book, No. 9.

Name .....

Street ..... City .....

EDDY

Fire Hydrants

Are given preference by so many fire protection and water works men because they know that more than half a century of experience go into their manufacture and they embody valuable and exclusive features.

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Waterford, N. Y.

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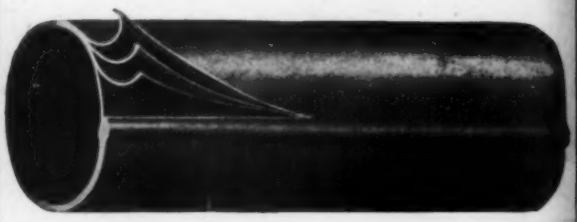

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